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JULY 1, 1957

61-13.

Telephone Engineer

AND MANAGEMENT

THE NATIONAL TELEPHONE MAGAZINE

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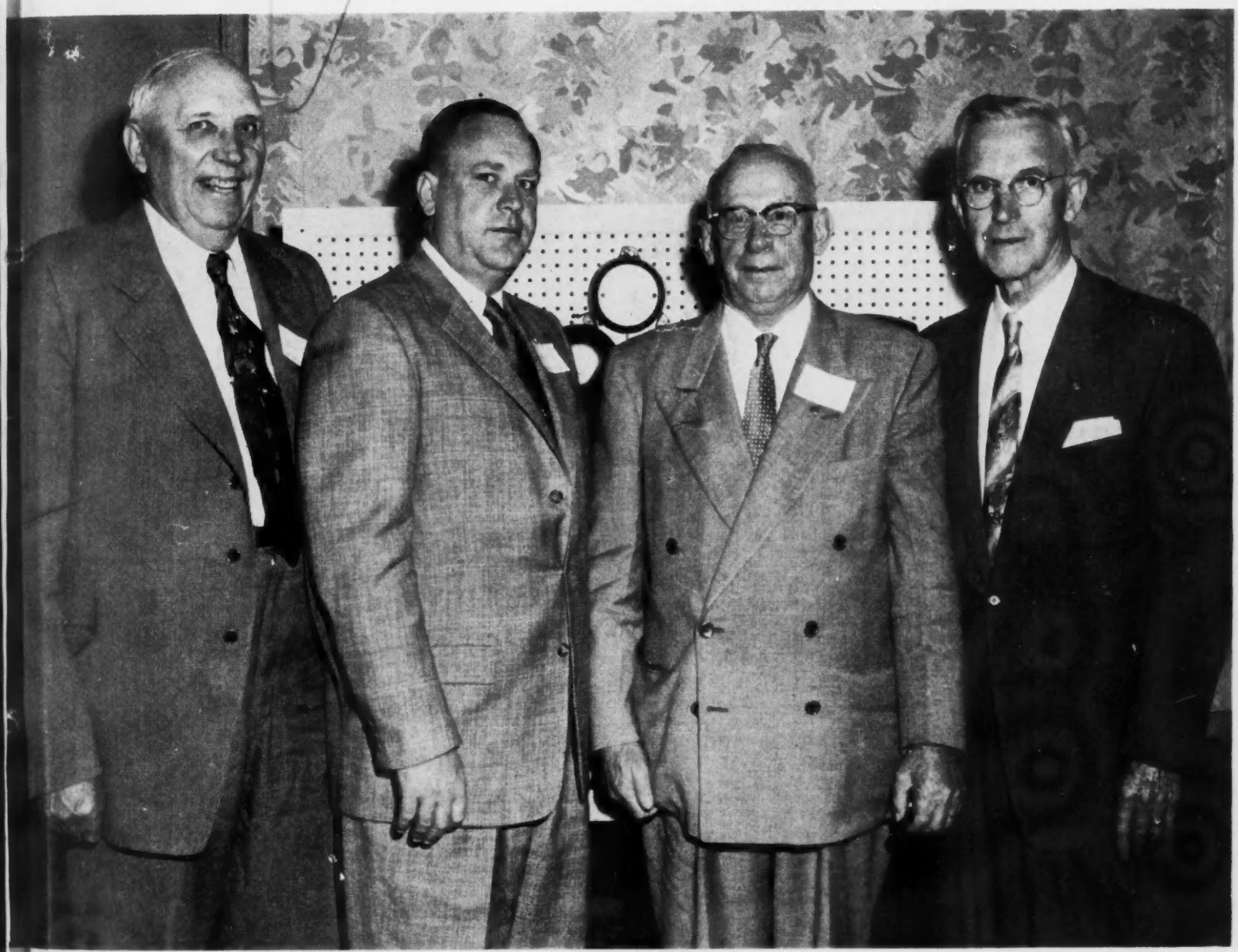

FEATURING IN THIS ISSUE

- ★ PROFITS AND SERVICE THROUGH BETTER MANAGEMENT, *by J. L. Morrison*
- ★ A CASE HISTORY REPORT ON LONG LIFE UTILITY POLES
- ★ MODERN CABLE CONSTRUCTION METHODS, *by John S. Reed*
- ★ EDITORIAL ★ NEWSLETTER ★ NEW PRODUCTS ★ NEWS BRIEFS

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Donald F. Anderson, General Manager of the Geneseo Telephone Company, Geneseo, Illinois, and Mr. Donald M. Little, the gas station owner on whose property an Alcoa Booth is installed, look on as a trucker uses the booth to report to his express line. Geneseo is 150 miles due west of Chicago on U.S. Route 6. Many of the town's 5,000 residents commute to the nearby Tri-City area of Davenport, Rock Island and Moline.

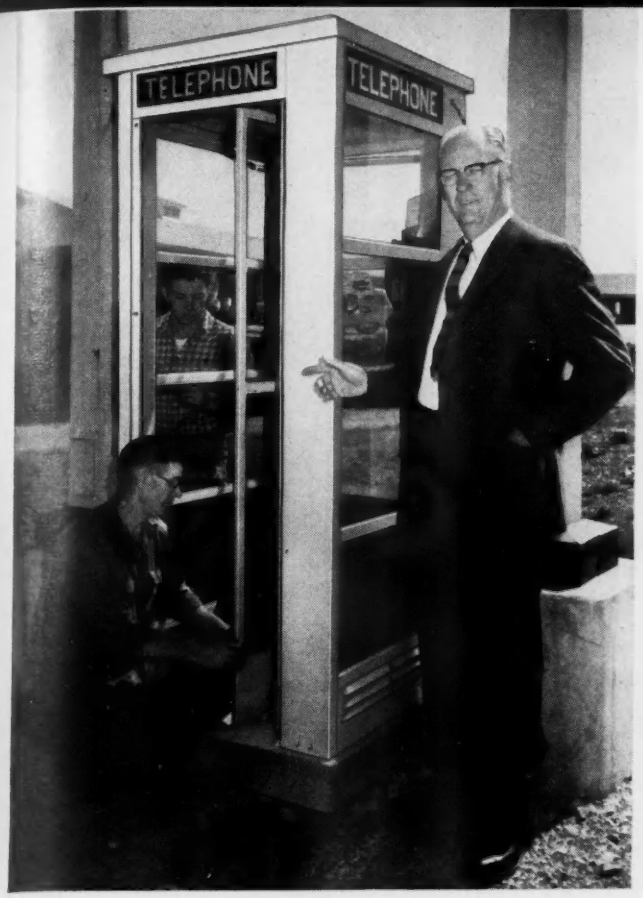
"SEEMS LIKE EVERYBODY WANTS ALCOA BOOTHS!"

Reports Donald F. Anderson, of Geneseo Telephone Company

"Since our town is located right on U.S. Route 6, we get a lot of transient motorists and truckers passing through," says Donald F. Anderson, General Manager of Geneseo Telephone Company, Geneseo, Illinois. "Local businessmen such as gas station, restaurant and motel owners frequently request that we install an Alcoa® Outdoor Booth on their property. As one service station operator put it when he asked for a booth, 'If we can get 'em stopped, we stand a good chance of selling 'em something'."

Geneseo Telephone Company now operates seven outdoor booths, five of which are of Alcoa manufacture, and plans to add more Alcoa Booths. There has been some door-closing trouble and glass breakage with the two non-aluminum booths, but performance of the Alcoa Booths has been trouble-free.

"As a matter of fact," says Manager Anderson, "before putting up these Alcoa Booths, we were very much afraid of vandalism. Actually, we have had no cases of damage of any kind."



"ASSEMBLY INSTRUCTIONS ARE EASY TO FOLLOW" . . . says Geneseo Telephone Company General Manager, Donald F. Anderson. "Our men take about four hours to erect a booth. The first one assembled takes the most time. After that, the men hardly need to refer to the instructions at all."

"ALCOA BOOTHS DON'T TAKE UP MUCH ROOM on the property owner's land," says Manager Anderson, "yet the booths are big on the inside. Even when the ladies are shopping and are loaded down with packages, there's plenty of room on the inside to use the telephone."

"WE'RE PUBLIC RELATIONS CONSCIOUS at Geneseo Telephone Company," says Don Anderson, "so we were glad to get a free Alcoa Goodwill Kit with our new booths. The kit contained radio and TV commercials, publicity articles, newspaper ad mats and bill enclosures."

"OUR BOOTHS EARN $75 TO $85 A MONTH on the main road," says Mr. Anderson. "We feel at least 50 to 60% of this is new business that we wouldn't otherwise obtain. The revenue shoots way up in the summertime when tourist traffic through our town is the heaviest." Shown here is cashier, Mrs. Richard King, depositing coins with William H. Bean, bank teller.

GET MORE INFORMATION ON ALCOA BOOTHS. Write for brochure. And ask your jobber how Alcoa Booths can increase your revenue and build customer good will. ALUMINUM COMPANY OF AMERICA, 1691-G Alcoa Bldg., Pittsburgh 19, Pa.

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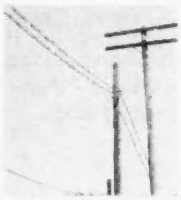
Better Management 25

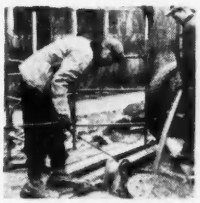
What is one of the most important functions of management? We know there are many answers to that question — but author Jim Morrison will place his money on "controls," the follow-through phase of management.

Long Life Utility Poles 29



Pressure treatment of timber poles has extended pole life from 10 to 30 or 35 years according to the conservative estimates generally accepted. But this case history report from the American Wood Preservers' Assoc. tells of many poles that have been in service for much longer periods.

Modern Cable Construction 36



Here is the latest information on methods of placing messenger strand for supporting telephone cable — pole requirements, proper guying procedures, cable pole spacings, and tension and sag data for short span cable construction.

New Products 64

What's new? Our New Product editor has found — (1) a safe, one man, foolproof method of handling reels; (2) a new automatic emergency light; and (3) a new FM Model car-call receiver.

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FRONT COVER

A RECORD OF over 60 years of service to the Wisconsin State Telephone Association is represented by the four Wisconsin men shown on the front cover (l. to r.) T. H. SANDERSON, J. F. BENJAMIN, A. H. BOWDEN, and B. H. PIEPMEIER. For complete story see page 54.

Volume 61, No. 12. Published on the 1st and 15th of each month by TELEPHONE ENGINEER PUBLISHING CORP. Office of Publication, Rochelle, Ill. Executive and Editorial Office, 7720 Sheridan Road, Chicago 26, Ill. Telephone — Rogers Park 4-3040. Subscriptions: U. S. and Possessions, $3.00 per year; Canada $3.50; in all other countries, $5.50. Single copies, U.S.A., 50 cents. Entered as Second Class matter at the post office at Rochelle, Ill. under the act of March 3, 1879.

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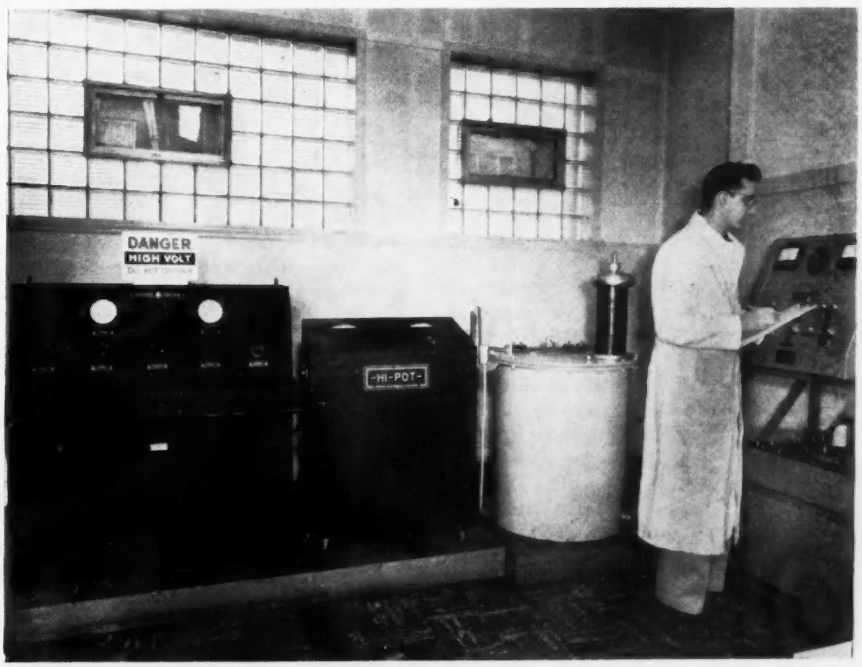

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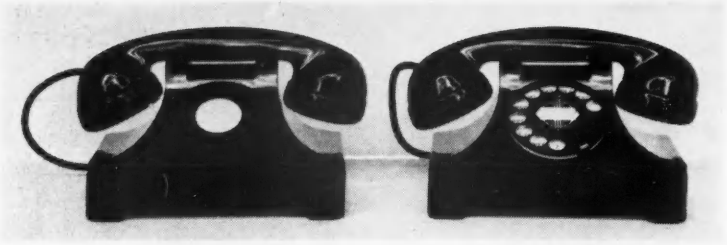

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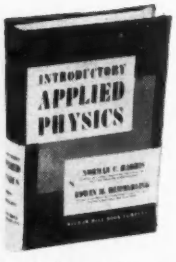

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Book Reviews

"Transistor Circuit Engineering," edited by Richard F. Shea. Published by John Wiley & Sons, Inc. 468 pages; $12.00. *Order from Educational Division, "Telephone Engineer & Management," 7720 N. Sheridan Rd., Chicago 26, Ill.*

"Transistor Circuit Engineering" sets forth the tools necessary to do actual circuit designs and develop correct, usable circuits. Readily applicable to a variety of fields, the book shows how to build audio amplifiers, radio frequency amplifiers, oscillators, d-c amplifiers, and other components, using available transistors. How to combine these elements into systems such as radio receivers, television sets, and high fidelity audio systems is also related.

"Symposium On Minimum Property Values Of Electrical Insulating Materials;" (ASTM Special Technical Publication 188); *Heavy Paper Cover, 6 x 9", 48 Pages,* $1.75: *American Society For Testing Materials, 1916 Race St., Dept. TE&M. Philadelphia 3, Pa.*

This Symposium serves as an excellent starting point from which further research may go forward towards solving some of the perplexing problems associated with electrical insulation.

"Chilton's 1957 *Automobile Repair Manual," 28th edition, Published by Chilton Book Division, 56th. & Chestnut Sts., Philadelphia* 39, *Pa.*

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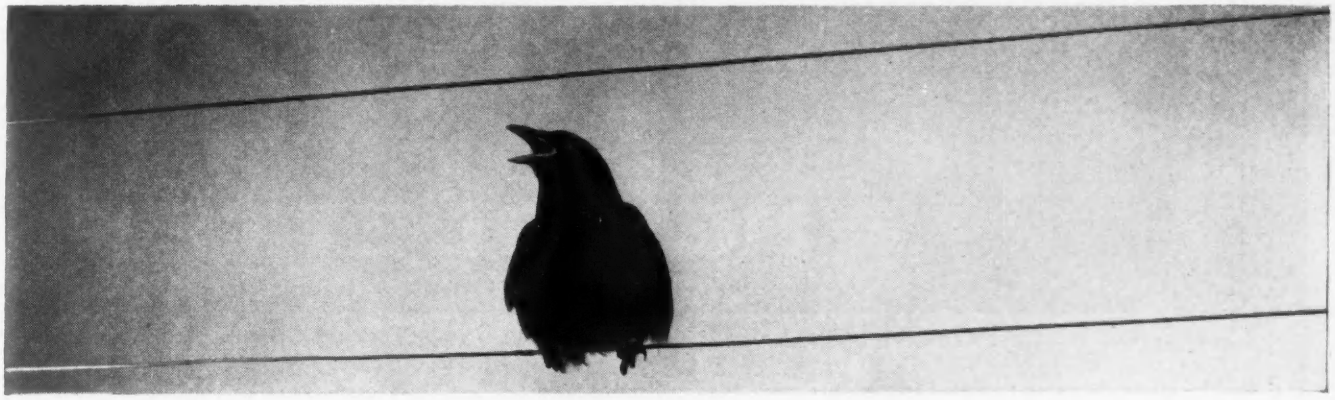
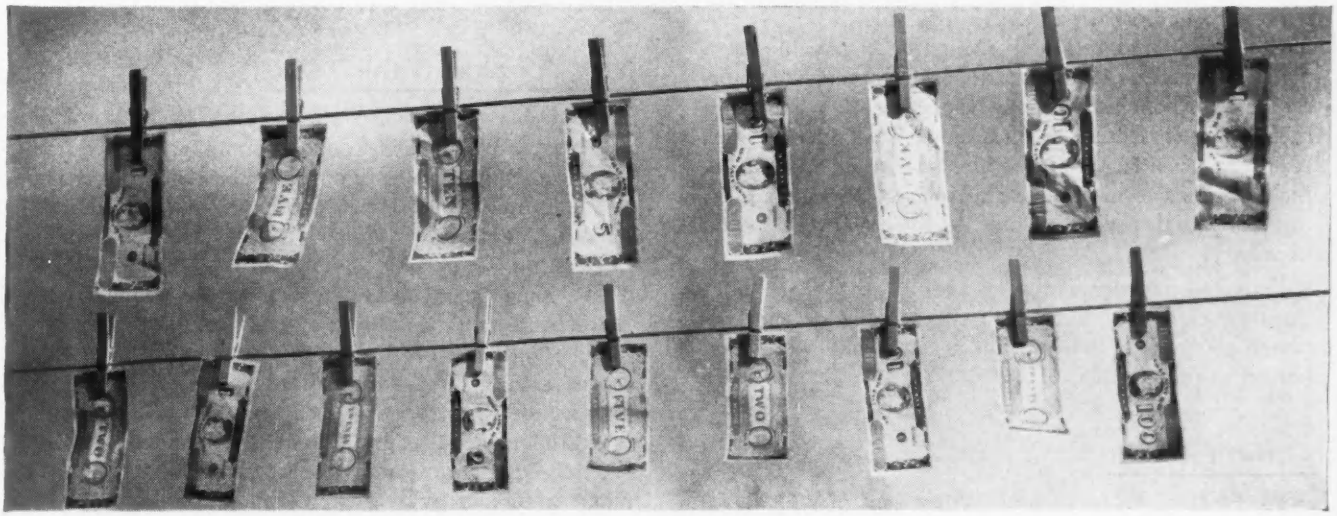


can carry more toll revenue



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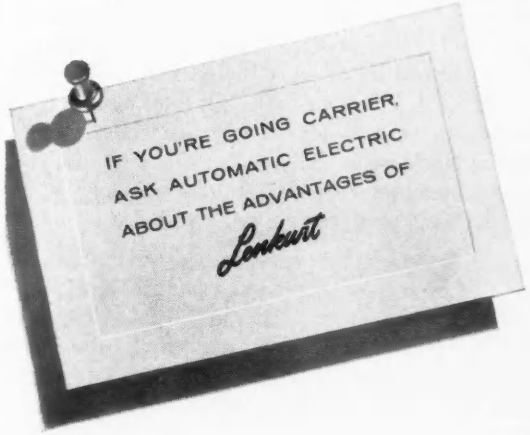

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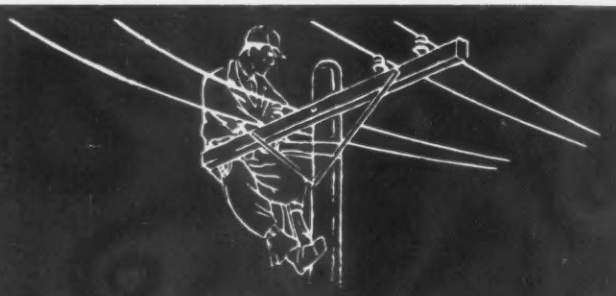
INDUSTRY NEWSLETTER



REA Changes Methods Of Handling Interest And Principal Payments

CHANGES in methods of handling interest and principal payments on Rural Electrification Administration loans were announced last month by REA in a bulletin to its borrowers. Under new rules, effective immediately but not retroactive, interest is payable on a quarterly basis as it accrues. In past, payment of interest was postponed during early portion of a loan, and accrued interest during that period was paid later. Another revision, however, provides that loans may include funds to use in making interest payments, during an initial period of up to five years, if found necessary.

Principal payments are to begin three years after the date of a note, similar to the practice in the telephone program at present, but an additional deferment period is permissible.

Growth Report

BY END of March, about 74 per cent of 47,800,000 households in United States had telephone service. According to the latest summary of telephone statistics, released by American Tel. & Tel. Co. number of telephones in service on March 31 had reached 57,210,000 including 49,870,000 in Bell System. Telephones served by Independent companies numbered 8,340,000. Average daily conversations during three months ended March 31 totaled 178,696,000 in Bell System and 216,500,000 in the industry as a whole.

Course in Telephone Engineering

TWO-YEAR course in telephone technology, to provide training in field of applied telephone engineering, will be launched this fall by Southern Technical Institute, Chamblee, Ga., if anticipated initial enrollment of 100 is realized, it has been announced by W. R. Halstead, Head of Southern Tech Electrical Department.

Course would require 120 quarter-year hours credit for graduation, with students spending slightly more than 60 per cent of their time in classroom and remainder in laboratory. Basic sciences, technical specialties, such as electronics, circuitry, radio, dial central office equipment technology, outside plant, carrier systems, and interference and protection will make up curriculum, with emphasis on technical specialties.

New course, Mr. Halstead said, is result of numerous inquiries from Bell and Independent telephone companies, Rural Electrification Administration, and other organizations.

New "Current Value" State

THE NEW Minnesota state law requiring state Railroad & Warehouse Commission to give consideration to current value in fixing telephone rates has raised to 15 the number of states which provide for commission consideration of fair or current value in telephone ratemaking.

The amendment to the former statute provides that "In determining the valuation of any telephone property for the purpose of prescribing reasonable rates, the commission shall give due consideration to evidence of the cost of the property when first devoted to public use, prudent acquisition cost to the telephone company less depreciation on each, current value thereof and any other factors or evidence material and relevant thereto." The law previously directed the commission to fix "reasonable" rates.

REA Borrowers Complete Construction Of 100,000 Miles Of Phone Line

AT CLOSE of May, Rural Electrification Administration telephone borrowers rounded a milestone in program with completion of more than 100,000 miles of line covered in REA telephone loans. Of total of 100,714 miles of new and rebuilt line now in service, all but about 5000 miles is new. REA's latest report of exchange cutovers shows that 295 borrowers have cut over to service 1130 dial exchanges.

Commission Orders

THE WISCONSIN Public Service Commission has authorized an annual rate increase of $3,451 to the Cecil Green Valley Toll Co., to offset recent wage increases.

The PSC also gave permission to the East Christiana Farmers Telephone Co. to discontinue service on its lines in Dane County. The General Telephone Co. of

Wisconsin will take over the company's service and operate it from its Cambridge exchange.

Highlights

WILLIAM C. MUESING was elected pres. of New Ulm (Minn.) Rural Tel. Co. at meeting of directors. Other officers are: Alton Wellner, vice pres.; Arthur Walser, sec.; Frank H. Seifert, treas. Fred Pfaender, who served as president over 50 years, was elected honorary president . . . Southwestern Bell Tel. Co. was granted permit by Kansas Corporation Commission to purchase Mulvane (Kan.) Tel. Co. for $100,000, and certificate of convenience to assume customers of Lone Star and Clinton Tel. Companies and install dial service linking about 300 customers to the Lawrence Bell exchange . . . J. B. N. Co. took over Fairview (Kan.) Tel. Co. June 1. J. C. Carson of Netawaka, Kan., who bought the company in 1956, said the system will be converted to dial.

Frederick Johnson, board chairman, Bell Tel. Co. of Canada since 1953, was honored by friends and business associates at dinner in Montreal last month, marking his retirement. Johnson joined Bell of Canada as a ledgerkeeper in 1910 and rose through positions of accountant and comptroller to become president in 1944 . . . British Columbia Tel. Co., Vancouver, estimated consolidated net profit for quarter ended March 31st at $792,425 ($797,701 in same period last year), a 0.7% decline. Gross capital expenditure for quarter amounted to $8 million. Telephones in service totaled 418,961, a 6,826 gain for quarter . . . H.G.O. (Jerry) Weiler, vice pres. and general manager of Southern Nevada Telephone Co., Las Vegas, for past three years, has been elected president of the company. Weiler joined Nevada Tel. in 1954 and initiated a dial conversion and expansion program which has resulted in an increase in plant investment from two million dollars to more than 12 million dollars.

Deaths

HERMAN LUEDERS, 81, died May 30 in Norwood, Minn. following a three-month illness. Mr. Lueders had managed the Carver County Tel. Co. from 1908 until his retirement in 1949. He was a charter member of the Minnesota Telephone Association and had served as its vice president and on the board of directors. . . . H. H. Thompson, 52, died suddenly on June 7 at Morristown, Minn. where he owned and managed the Morristown Tel. Co.

Worth Writing For

A 12-PAGE two-color "Necessaries" catalog describing and illustrating tested and approved accessories for International trucks has been issued by the motor truck division of International Harvester Co. The accessories shown were selected as being necessary to the greater comfort, economy, safety or convenience of truck operation. All have been tested and approved by the International truck engineering department. Catalog, form MT-93, can be secured by writing *Consumer Relations Department*, Dept. TE&M, International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

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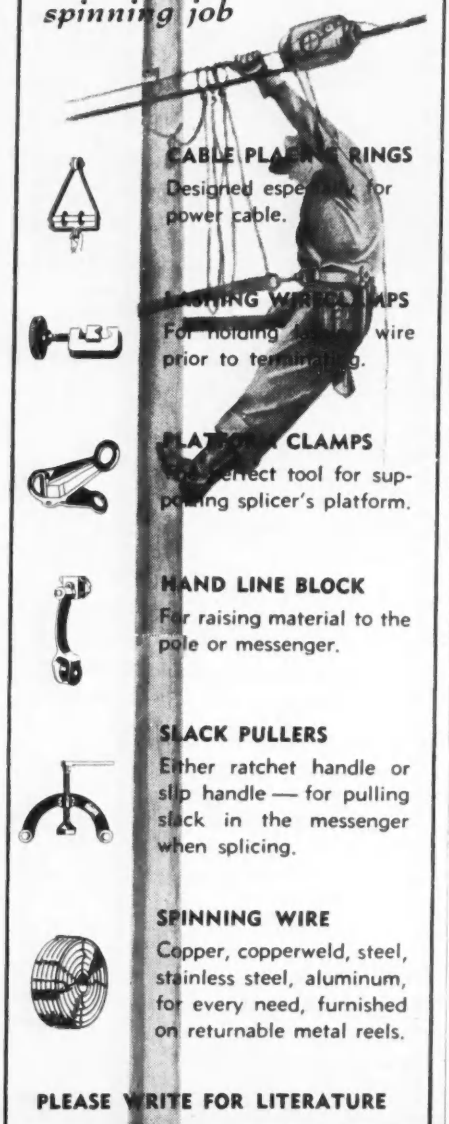

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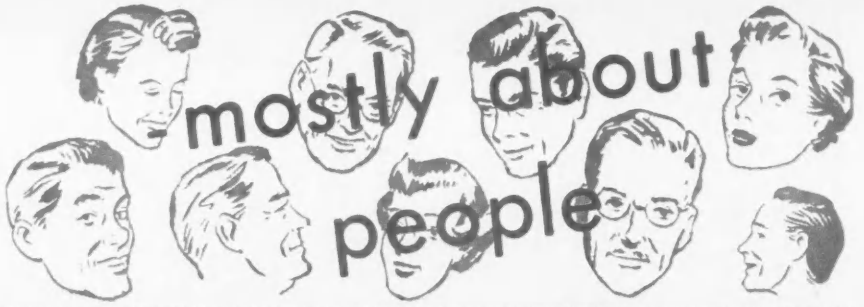

ACROSS THE EDITOR'S DESK

Meet Dick Reynolds

NOTICE THE additional *Reynolds* named in our masthead of staff members? *Dick Reynolds*, our new *Production Manager*, is the son of our Managing Editor *John G. Reynolds* and right proud we are to have him on the Staff.

Dick has finished his formal education and served a complete hitch (4 years) in the Armed Forces so we feel him well qualified to join the *Father-Son* team that has had many counterparts in the telephone trade press.

We predict a wonderful future for *Richard A. Reynolds*, (*Dick*—that is) and welcome him to our industry!

Oscar Burton

ALONG with others we want to send our "Congratulations" to *Oscar Burton* who recently marked the 50th anniversary of his association with the Gulf States Telephone Co., Tyler, Texas.

Mr. Burton's life has been one of interest and with his prodigious memory he could write an interesting book on the telephone business in Texas. His era covers the seven to six generation — seven in the morning to six at night and the era of the latest in electronics and five days a week.

His life is another example of the opportunities in our wonderful land. Starting as a lineman and now in the position of Vice President of one of the finest telephone companies, he has also found time to devote a goodly portion to civic duties, having been mayor of Tyler, past president of the Texas Telephone Association and past president of the United States Independent Telephone Association. He served on the boards of both for many years and is still a member of the Board of Directors of the Texas association.

We salute our good friend, *Oscar Burton*, on his 50th anniversary with the Gulf States Telephone Co.

Howard Ellis

LAST MONTH the Pratt (Kans.) *Tribune* paid a well deserved editorial tribute to *Howard Ellis*, president of the Haviland (Kans.) Telephone Co. Mr. Ellis had a limited knowledge of telephones and was looking for a part-time job when he purchased the 350-telephone exchange at Haviland eight years ago. Little did he think that within eight years he would be owning a system which provides dial service to 1,075 patrons, many of them farmers.

When he made his initial purchase in 1949 he said all he knew about telephones was that if they were working you could talk over them and he remembered something about their operation from his high school physics book. With a great determination to learn he began to read anything that contained information about telephones. These included trade magazines and suppliers' sales books.

The *Howard Ellis* story truly proves what can be accomplished by a man who decides a big job can be done.

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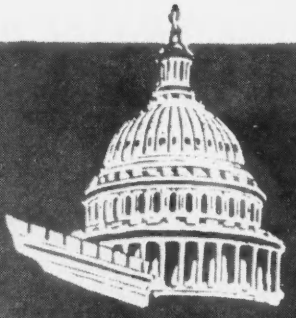

The 890-940 mc Band

THE FULL membership of the Federal Communications Commission, for the first time, has had an opportunity to hear the full story of the important uses of the 890-940 megacycle band being made in Independent telephony across the nation.

Witnesses for the US Independent Telephone Association and the Lenkurt Electric Co., principal supplier of microwave radio relay equipment to the telephone companies in the 900 mc area, told their story in the FCC's continued hearings on microwave radio policies and frequency allocations in that region of the spectrum.

Significance of the overall case was exemplified in a statement by an American Telephone & Telegraph Co. witness in testimony prepared for presentation, but not yet given as this column was written.

AT&T Chief Engineer Gordon N. Thayer was slated to tell the Commission that "We believe that the future development of communications in this country will be determined in large measure by the frequency allocations and policy decisions made by the Commission in this proceeding."

Independent spokesmen, as the Bell System witnesses were scheduled to do, emphasized that the anticipated future growth of telephone service requirements makes it imperative that the common carriers have adequate frequency assignments in the microwave areas. Use of the microwave area for heavy-duty radio relay systems is frequency conservation at its best, they declared, adding that the common carriers must not be subjected to "cream-skimming" by private users who would be likely to put in their own systems in the low-cost routes, if permitted to do so by the FCC.

The Independents, making heavy use of the 900 mc area in the face of an FCC decision of 10 years ago to allocate the band primarily for industrial, scientific, and medical use (diathermy, industrial heating, garage door openers, etc.) as a sort of "graveyard" band, stressed that for technical and economic reasons the loss of the band would be a serious blow.

Without some action by the FCC, however, they pointed out that they are in danger of losing the band, because of the advent of electronic cookers for home use which would set up intolerable interference. Use of the band for industrial and scientific purposes is possible to "live with," they indicated, but this would become impossible if housewives across the nation had electronic ovens furiously radiating energy in the whole 890-940 mc band.

The two-day assault on the use of the full 50 mc on a primary basis for ISM highlighted the first of two "common carriers weeks" in the microwave hearings. AT&T and the Western Union Telegraph Co. were slated to go on the following week. The hearings are to run through July at a three-day-a-week pace, and it is anticipated they will be nearly concluded by the end of July.

Main proponents of a change in the present allocation of 890-940 mc were three witnesses for Lenkurt, headed by President Lennart G. Erickson, and two of the USITA spokesmen — M. L. Donaldson, Chief Engineer of the Peninsular Telephone Co., and Cyrus H. McLean, Director of Foreign Operations of the General Telephone Corp. and Chairman of the USITA radio and carrier engineering subcommittee.

They followed more general presentations on the Independents' overall needs by General Telephone President Donald C. Power; Paul H. Henson, Chief Engineer of the Lincoln Telephone & Telegraph Co.; and USITA Secretary George C. Richert, who read a statement by Northern Ohio Telephone Co. President W. C. Henry, unable to appear at the sessions.

Each of the telephone engineering witnesses was asked if he were familiar with a study by a committee of the Radio-Electronics-Television Manufacturers Association presented the preceding week. The RETMA committee outlined a proposed frequency assignment scheme which it said would accommodate "some 3600 stations in an area 100 miles square" in open country, and would permit "some 1500 stations" to terminate microwave systems in a metropolitan area "on frequencies now allocated for operational fixed (non-common car-

rier point-to-point) purposes in the bands between 890 and 12,700 mc through the use of "relatively simple engineering and administrative procedures."

W. B. Farinon, Manager of Lenkurt's Commercial Projects Division, was the only witness who had an opportunity to make a brief study of the RETMA committee report. He said the plan does not relate frequencies or bandwidths to voice circuits, and that he believes it is not possible to know if there are enough frequencies until voice circuit requirements are determined.

Furthermore, he declared, the committee has assumed an "idealistic" arrangement of microwave systems, which "do not always go in a straight line." The report, he added, said that the number of systems which can be installed between two points is not taken into account, while in engineering common carrier systems, this is a "major consideration."

Another key point came with questioning of Mr. Donaldson and Mr. McLean about allegations by the Minute Maid Corp., Plymouth, Fla. Minute Maid's petition for a special industrial microwave system to tie together its citrus fruit processing operations, which charged inadequate service provided and offered by Florida Independents, was a major factor in the FCC's establishment of the above-890 mc investigation.

Mr. Donaldson said that: Peninsular has not refused to make a quotation on a microwave system, but wishes to engineer one on a basis which will take into account other requirements, without putting up a special network for Minute Maid; it would give Minute Maid a four-wire system throughout, and that "any" microwave system is four-wire until the terminal is reached; Peninsular has not refused to bid on a control line for a VHF station operated by a Minute Maid predecessor company, and that he personally prepared the bid; and that it is his company's policy to provide service on a reasonable basis when called on.

Mr. McLean said he is "fully convinced" that the three Independents involved and the Southern Bell Telephone & Telegraph Co. could provide adequate facilities, after an inspection of the area.

In his testimony, Mr. Power took the stand that an FCC policy of authorizing private systems "where telephone common carriers are ready, able, and willing to provide the necessary facilities, whether by wire or radio" would have "a detrimental effect on the ability of telephone companies to serve the public interest."

He declared that the Independents "are particularly concerned that the Commission is considering the possibility of licensing private communications systems, utilizing radio as the medium, to operate in a field traditionally handled by telephone company common carriers in the interest of the public."

The General Telephone President stressed that "If existing or prospective subscribers are permitted to substitute their own private systems for existing telephone company facilities or facilities which the telephone company can readily provide in a reasonable time, the economic well-being of the telephone company is adversely affected. The telephone company can look to only one source to replace the revenue siphoned off by privately owned, competing systems. Added revenues sufficient to make up for that lost by the establishing of private systems must be obtained by increasing the rates to the general public served by the company.

The Independent industry's attack on primary use of 890-940 mc for ISM purposes was epitomized in two comments — one by former FCC Commissioner George E. Sterling, appearing as a consultant for Lenkurt, that "much has been said about television hogging channels, but this device (the electronic oven) is a glutton," and the other by Lenkurt President Erickson that it is a "real waste of public property" (the frequency spectrum) to have electronic stoves "wandering over such a broad band" which could provide a substantial number of communications channels.

Mr. Sterling, recalling that he was instrumental in the original primary allocation to ISM, noted that 10 years has passed since this philosophy was adopted, and that the "time has come" when the Commission must reevaluate its position. He said the FCC could "afford to be liberal" 10 years ago, but now should consider "tightening up" on ISM operations, possibly through rulemaking to reduce the space allowed.

Mr. Erickson, taking pains to explain how his company began engineering and furnishing equipment in the face of the primary allocation to ISM, said that Lenkurt had full confidence, after a thorough survey of the situation, in its ability to "live with" ISM operations through technical cooperation.

He pointed out that no one at that time thought of "household devices" in ISM, and that Lenkurt assumed that industrial, scientific, and medical meant what the name implies. Telephone companies could share the band with industrial and scientific organizations on a cooperative basis, he declared, but he doubted their ability to "explain the situation to a housewife."

Highlights

FILLMORE County Tel. Co-op., La Crescent, Minn., has changed its name to Ace Tel. Assoc. . . . Byron (Ga.) Tel. Co., has started a $190,000 expansion program which includes a switchover to dial and doubling of present facilities . . . The Oran Mutual Tel. Co., Oelwein, Ia., has voted to convert to dial . . . Chautauqua & Erie Tel. Corp., Westfield, N. Y., has started an expansion and improvement program costing nearly $400,000. Samuel F. Nixon, pres. of the corporation, said program will include: (1) Conversion of Westfield exchange to dial; (2) construction of a modern two-story, fire-proof building at an approximate cost of $100,000; and (3) introduction of customer toll dialing between the company's six exchanges and other points in Chautauqua County as well as national toll dialing.

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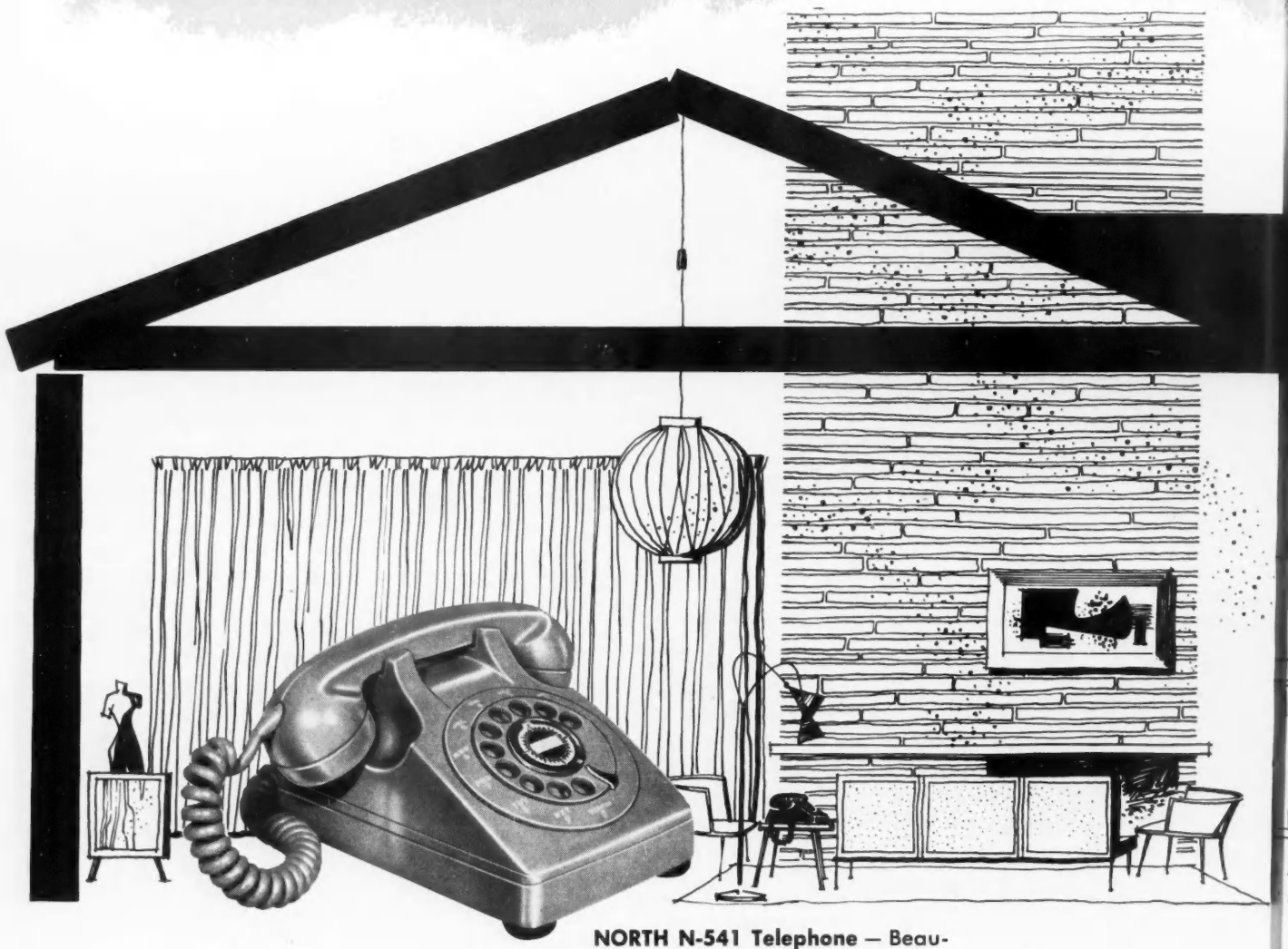

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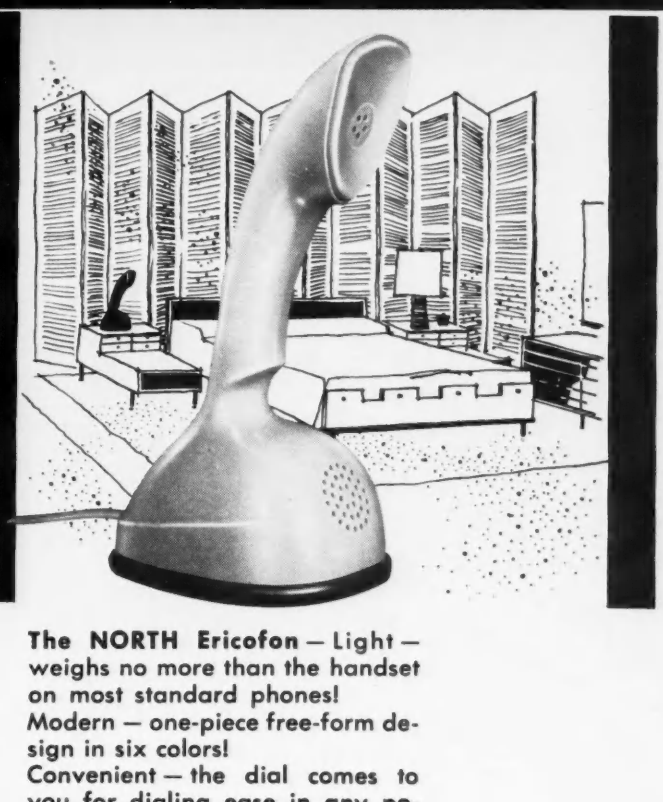

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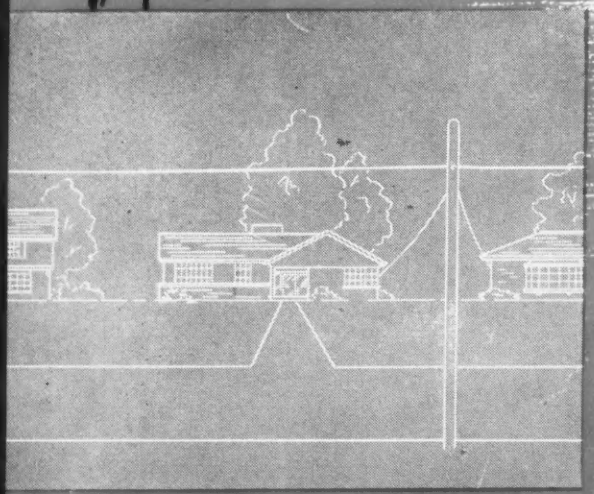

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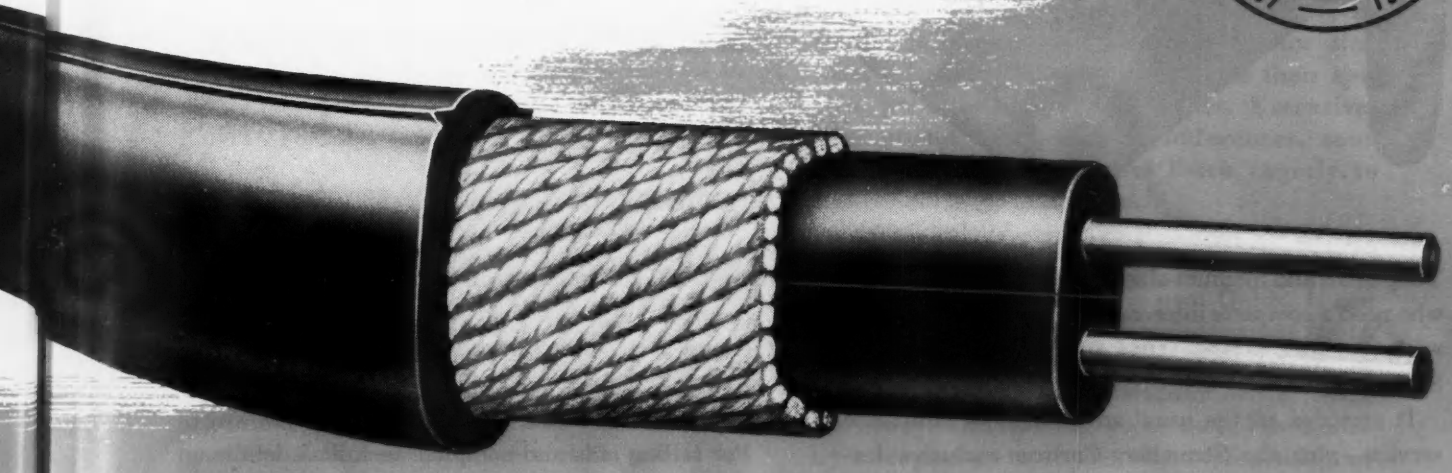

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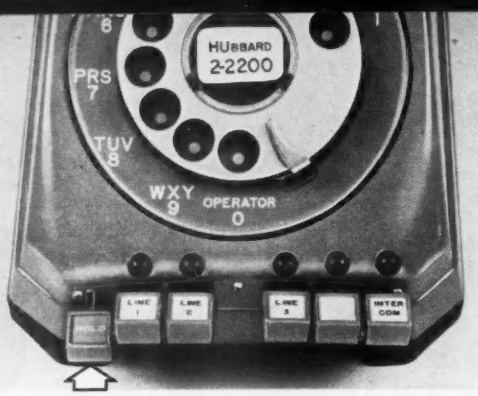

2 Hold calls and transfer them without cutting off the outside party. This feature means increased efficiency and improved customer relations for the user.

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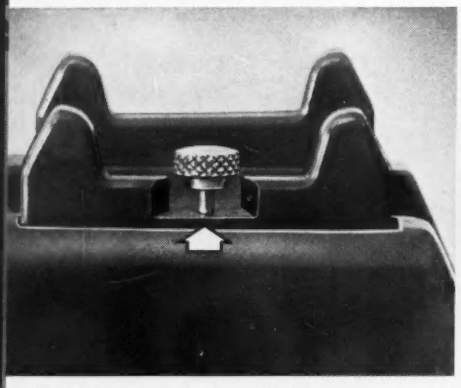
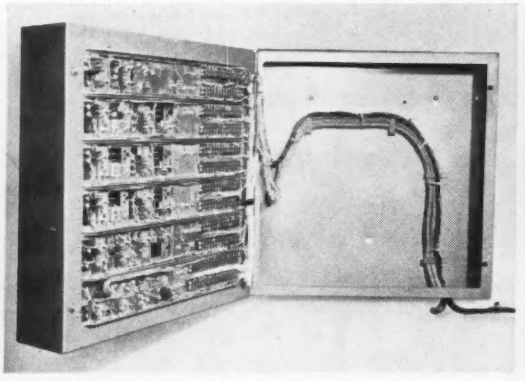


4 Manual exclusion feature gives user complete privacy. When button is lifted, no one in the system can hear conversation. Several stations in system may have this feature.



5 Relay box swings open easily, permits quick access for inspection and maintenance. Dial selector is mounted here in system with up to 10 stations.

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EDITORIAL

"An Important Responsibility"

ALONG about quitting time one day last week "Old Timer" dropped by for one of his infrequent visits. After bringing us up-to-date on happenings in his "neck of the woods," he settled back in his chair and said, "*One big thing I notice about our industry is the fact that management responsibilities are constantly changing with the times.*"

Since the subject is a pet of ours we kept still and let "Old Timer" have his say.

"Today," he went on, "industry members are talking more about — the responsibility to train the management leaders of tomorrow; the responsibility to cooperate with each other in the building of a stronger industry; the responsibility to do a more effective job of advertising and selling so we can obtain our share of the consumer's dollar; the responsibility to be well-informed about the world in which we live; the responsibility to undertake programs and activities which will result in greater understanding of how our industry functions in the public interest . . . This is all good. We need to continue to take inventory of our responsibilities and determine which are the most important and which of these need immediate attention. . . ."

"Which one do you think is most important?" we asked.

"That's easy," he answered. "As the industry grows in size and importance it will continue to need *better equipped men to lead it.* As I see it, we must ask ourselves whether our present management development programs are adequate to meet the challenges of today and the future — and if not what needs to be done. The one thing our industry cannot afford to do is to lag behind in management development!"

With that statement "Old Timer" chanced upon a subject of immediate concern to us.

Briefly that subject concerns a threadworn argument which goes on in this vein: *Is management skill born in a person or can it be acquired?*

We do not know whether there is any clear answer to that question which can be substantiated with scientific accuracy. We do know, however, that the skills and characteristics we associate with leadership — whether hereditary or acquired — can be increased. The final degree of proficiency is dependent upon *aptitude*, *training* and *experience.*

For example: A natural golfer and an awkward hopeful may have widely different scores the first game they play, but each improves with help and practice. The natural golfer may come down from 120 to sub-par and the awkward player from 180 to 90, but they both improve with training and experience.

In the same fashion, the records prove that the executive who was not "born that way" may never equal the one who was, but he may nevertheless become a highly competent manager.

We well know that no one expects the young man who is just starting his business career to exhibit management skill comparable to that of the seasoned executive. If he has a natural talent, he will do better than those not so fortunately endowed, and he will also learn faster. But learn he must if he is ever to reach his full potentiality.

Those who are active these days in the field of management education know that what he learns is something more than specific procedures and techniques. Executives who attend management conferences, seminars and training courses listen eagerly to the experiences of others.

What they are acquiring cannot be strictly technical knowledge — for that they would turn solely to men in their own fields. *It can only be skill in the art of management itself.* And that skill is important. Whether it be war, depression, or individual crisis, there are always emergencies to be met. The industry's capacity to meet them depends, of course, upon the *skill of people in management positions to manage.*

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Who can blame "New-Business" Bill for getting excited? He's just realized the new Super Mart could be a terrific spot for a paystation! Bill knows that new locations like this pop up surprisingly often—in almost every community. He keeps his eyes open—finds a lot of good paystation sites just driving around town.

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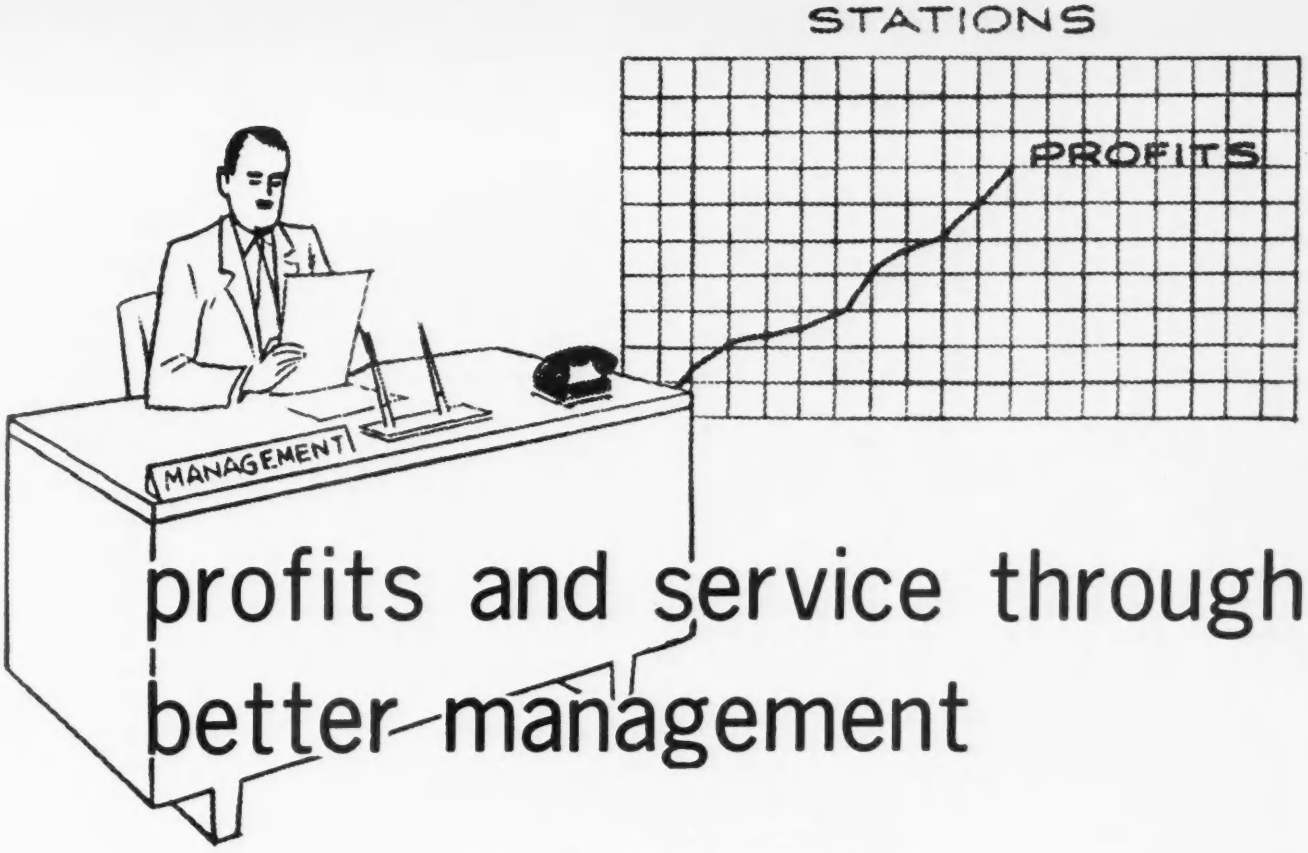


profits and service through better management

By JAMES L. MORRISON

CONTROLLING is the follow-through of management. It assists management in making performance conform with the established plan. Here's how you can set up procedures that will help you achieve adequate over-all control.

Controlling and Evaluating

UP TO THIS POINT in our discussions we have considered all but one of the most important functions of management. We have seen how these functions are interrelated and dependent upon each other. We have observed that planning, among other things, is fundamental to the successful operation of any business. Planning, however, is of little value if the plans are not properly executed. To be certain, therefore, that plans are properly carried out and, to complete the operating cycle, management must establish certain "controls."

Controlling is the "follow through" phase of management. It assists management in being certain that performance conforms with the established plan. For the most part it involves the use of checks and standards.

Management can be certain that adequate over-all control has been achieved if (1) policies covering the major aspects of the business have been formulated and are periodically reviewed; (2) a sound, up-to-date organizational structure is maintained; (3) key posts within the company are filled by high personnel; (4) financial aspects of the business are regularly analyzed; (5) long term plans are formulated and executed; and (6) sound budgeting is employed to guide the business toward profitable goals.

From the above it is evident that the job of controlling is highly dependent upon other phases of management. If there has been sound planning, if policies and procedures are well developed, and if personnel has been properly trained and directed, it will be easier to control the business. In fact, the controlling function is so dependent upon other phases of management that many authorities are reluctant to set it aside as a separate function.

Because of this high degree of relationship, we shall assume for the balance of our discussion that previous steps have been taken and the manager is now interested in seeing his program properly carried out.

Establish Standards

ALTHOUGH some controls are necessary in every organization, the need for them becomes greater as the company grows in size. In small companies the manager probably knows all employes, sees them frequently, knows what they are doing, handles all correspondence and does the buying. In such cases he probably knows what is going on everywhere within the company and should be in a position to achieve a high degree of over-all control.

In larger organizations the manager discovers that controlling becomes more complex. His first step, therefore, will be to determine if proper standards have been established. If suitable standards are not in existence they will be prepared for such things as quality and

quantity of service, employe performance, revenue and expenses. The standards will, of course, conform with over-all goals and objectives of the company.

For maximum effectiveness the responsibility for adhering to established standards should be assigned to appropriate individuals. Otherwise the standards will be difficult if not impossible to enforce and soon will be meaningless to all. Furthermore, when breakdowns or dislocations occur it will be easier to correct the situation if someone is responsible for the area in question.

Controlling is seldom satisfactorily achieved in a large organization if it is handled as a highly centralized function. In large companies it is seldom possible for one or two men to know everything that is going on. Effective control, therefore, contemplates a sound organizational structure and the delegation of both authority and responsibility to appropriate individuals.

In most companies there are certain objectives that do not lend themselves to specific control. Employe morale and public relations, for example, may fall in this category. This fact, however, in no way mitigates against being certain that one or more individuals are responsible for taking specific measures which contribute to the established objectives.

Establish Control Points

IT WOULD be literally impossible to establish controls over every phase of every activity in the average telephone company. The cost of controlling in such a situation would be prohibitive and the process would surely stifle individual initiative.

A much more desirable approach would call for the establishment of appropriate controls only at strategic points within the company. Such points would include, among others, payroll changes, approval of overtime, quality of service, and contact with customers.

In addition, controls should be designed to promptly identify areas which require corrective measures. They should be adequate to cover the situation and designed to identify the real cause of the problem. The controls should not discourage initiative and the cost should be reasonable under the circumstances. In short, the controls should be established in the right place at the right time and in the right amount.

"Controls should be adequate to cover the situation and designed to identify the real cause of the problem. In short, establish controls in the right place, at the right time and in the right amount."

Check Performance

THE CONTROLLING process is essentially a checking process. The checks will determine if performance measures up to the established standards.

To the extent possible it is desirable for company officials to personally check performance. This will include personal contacts and inspections which are particularly valuable. It might also include a requirement that advance approval be obtained from management before action is taken on certain matters.

Personal contacts and inspections, however, are time consuming and must be supplemented by reports. Essentially the manager is primarily interested in reports which point out deviations from established standards. These reports must be timely and accurate. Otherwise the value of corrective action may become lost through delay. Whenever possible the corrective action should be positive and thorough. This will help to assure satisfactory results in the future.

Budgetary Control

THE TERM "control" is most frequently used in connection with the financial aspects of a business. If management is unable to keep its "Treasury" in good order the organization will soon be in trouble.

The financial affairs of any business can best be controlled through proper use of the various budgets. Sound budgeting and the effective use thereof is, in fact, considered by many authorities to be the key to effective management. It not only facilitates proper handling of finances but can also be a useful tool in planning and coordinating.

Inasmuch as the general use of budgets has been considered in a previous installment we will confine ourselves at this point to the use of budgets as an aid to controlling.

The requisites for successful budgetary control are the same as for controlling generally. The budgets must set forth anticipated results or standards; they must be regularly checked to determine the degree of compliance; and the desired corrective action must be taken promptly when actual results vary from anticipated results.

Successful budgets, of course, contemplate specific planning. Rough estimates and unfounded predictions usually result in too much elasticity for effective control. The budgets should be detailed as much as is practical and be organized for efficient reference.

Budgetary control is fundamentally a matter of supervision. Money is spent by people. If employes are properly supervised, with the aid of well prepared budgets management can be reasonably certain that corporate funds will be well spent.

Cost Control

OF THE many facets of control, management is perhaps most interested in achieving satisfactory control over the cost of operation. The effort to control

costs should be continuing. Otherwise improvements will be short lived and employes will soon fall back into previous spending habits.

Cost control programs have not been highly developed in the telephone business. Regulatory agencies will allow rates designed to recover the reasonable costs of operation plus a return on investment. Unfortunately if management does an exceptional job in controlling costs to the point where profits are measurably improved it may find itself confronted with a "show cause" order designed to reduce rates. This possibility it not exactly an enticing incentive. Nevertheless, cost control programs can be helpful in assisting management to earn the full profit deemed fair by regulatory bodies.

Cost control is only a means to an end. The real objective is profit improvement. Futhermore, operating costs are only symptoms and not the real cause of the condition of the company. Accordingly, a cost control program should be designed to do something specific about the factors which make up the cost of doing business.

Half-hearted attempts at cost control are likely to fail. People always seem ready to find new ways to spend money and usually they are prepared to defend additional expenditures. A voluntary reduction in costs is seldom proposed by anyone.

As a general rule some individual should be given both the responsibility and the authority for establishing and carrying out a sound cost control program. When the program is ready for launching it should be thoroughly discussed with employes. They should be made a part of the program and their ideas and suggestions encouraged. Their interest and enthusiasm will produce the teamwork that is essential to success.

Once inaugurated the program should receive continued supervision and stimulation or it will soon run out of gas. Suggestions and ideas should be explored with an open mind. Contests and other special promotions can be useful in maintaining continued interest.

The mechanics of cost control are not difficult. The first step is to determine present costs and the elements that make up those costs. Generally, they will fall in one of three categories: labor, material, and overhead. Next, the cost elements must be analyzed, questioned and compared. Areas in which costs appear too high or in which economies appear possible are soft spots about which something should be done.

In addition to the foregoing, the following hints may prove helpful:

(1) *Dig into the records*, vouchers and other figures. You can't expect to achieve savings merely by asking questions.

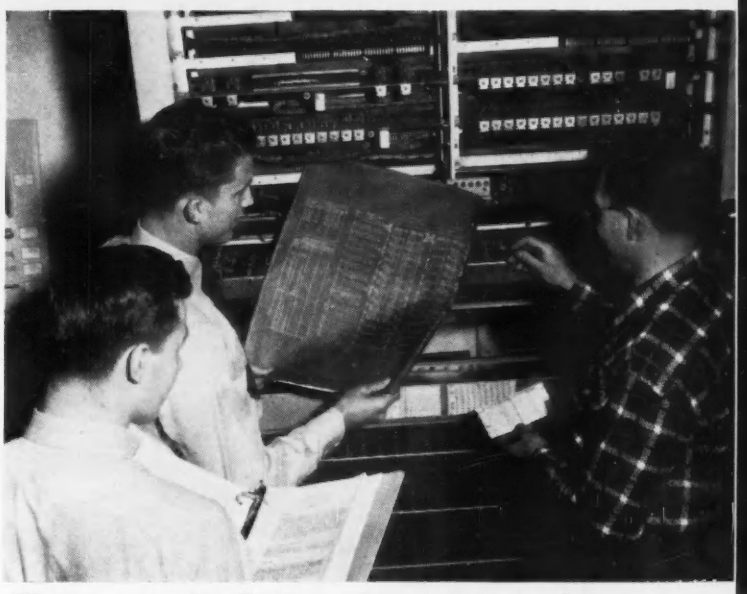
(2) *Strive for immediate results* — long term improvements can be studied later.

(3) *Break large and complex units down* into small units, then study and analyze.

(4) *Concentrate on the solution* of one problem at a time.

(5) *Watch for procedures and routines* established in the past as a temporary measure. Are they still necessary?

(6) *Study each job* and be certain the work is really necessary.



"The purpose of collecting information is to obtain revealing, accurate, complete and objective information on the matter under consideration."

Evaluation

THE practice of management is in large measure a process of decision making. Issues must be met and resolved if the company is to forge ahead. These fundamental facts are recognized universally and explain why a manager's ability to pass sound judgement is so highly prized.

There is, however, nothing super-natural about managers who consistently maintain a reputation for having sound judgment. The key to their success lies in most instances not in their ability to decide but rather in their ability to analyze and evaluate all the facts.

There are four basic steps in the over-all evaluation process. The first step is to collect the pertinent information and facts. The second step is analysis and interpretation of the data. The third step is to assemble the conclusions for subsequent use, and the final step consists of taking action.

Collecting Information

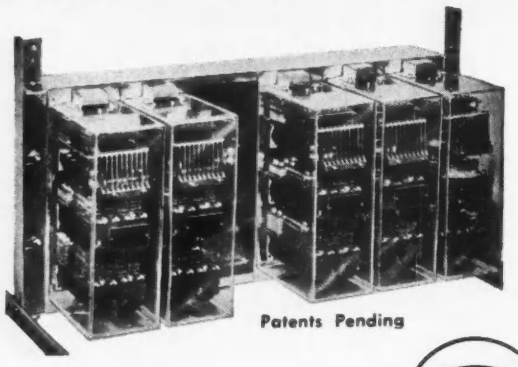
THE PURPOSE of collecting information is to obtain a clear picture of the matter under consideration. The information should be relevant, accurate, complete, and objective.

Opinions should not be introduced as facts. They may be useful in suggesting lines of inquiry but should not form the basis for a conclusion unless fully supported by facts.

Occasionally an investigation for facts will produce insufficient information upon which to base a conclusion. In such cases it may be necessary to conduct an experiment from which additional information can be obtained. If necessary, the experimentation should be thorough enough to be fully representative.

Analysis

THE ANALYZING process is fundamentally a judgment process. The facts should be carefully studied and interpretation should be meaningful. The evidence must be weighed for both quantity and quality. Generally the evaluator will be looking for four things:



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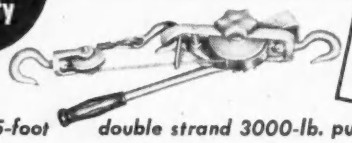

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for Better Values

(1) Evidence which can be measured against some need or standard.

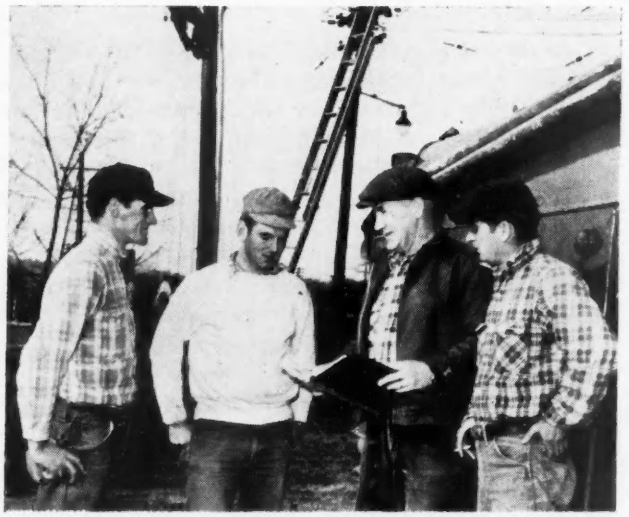
(2) Evidence which discloses a trend.

(3) Evidence which can be compared with known results in another department or company.

(4) Evidence which can be used in a cost comparison.

The interpretation process should produce conclusions that are understandable and recommendations that are capable of practical application.

If the conclusions call for a definite course of action, appropriate steps should be taken to make the necessary changes, or to put the procedure or program into operation. This done, management will then review the results and the evaluation process will continue in a never ending cycle.



"The interpretation process should produce conclusions that are understandable and recommendations that are capable of practical application."

Management Evaluation

THE FOREGOING material has been designed to assist management in meeting its evaluation obligations. At this point it would seem appropriate to say something about the evaluation of management itself.

Employes, investors and the public will all evaluate management from their respective viewpoints. Essentially, however, management must satisfy the owner or owners. If this is not done management will probably have little opportunity in which to try to satisfy other interested parties.

There are many yardsticks and ratios that can be used in evaluating management. For the most part they can be boiled down to the following:

(1) How good a job is management doing in earning a profit on the owners' investment?

(2) How fast is management making the owners' equity grow?

(3) How adequately is management letting the owners share in the profits?

(4) How good a job is management doing in making retained earnings earn new profits?

If management can provide satisfactory answers to these questions it can be reasonably certain of staying on the job long enough to satisfy the other interested groups. — *To Be Continued.*

A Case History Report

On Pressure Treatment of Timber Poles

LONG experience (from the turn of the Century) has provided the American Wood Preservers' Association with many case history reports on service records established by pole lines in various parts of the country that prove the value of pressure treatment of timber poles.

AFTER WOOD PRESERVING began with railroad ties, bridge and wharf timbers, poles for utility lines became the next major commodity to receive preservative treatment against decay fungi and wood destroying insects. Thus long experience (from the turn of the century) in widespread use has provided useful records for future guidance.

Pressure treatment of timber poles in telephone, telegraph, and power transmission lines has extended the life from five or 10 years to 30 or 35 years, according to the conservative estimates generally accepted. But a number of outstanding service records that have been documented indicate many poles and pole lines have been in service for much longer periods — ranging up to 58 years.

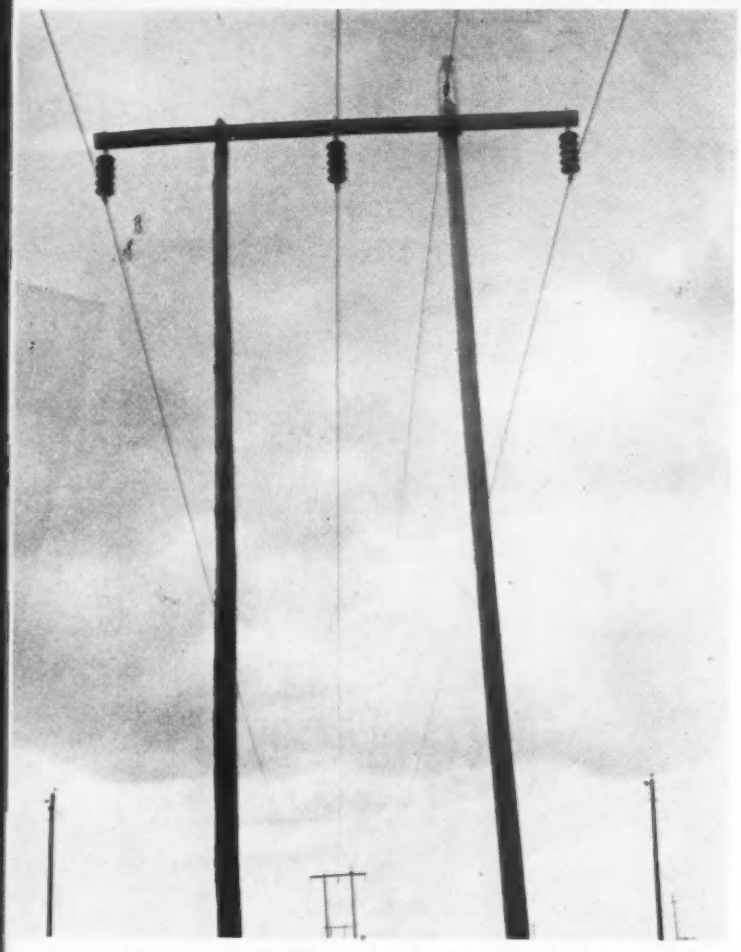
Adequate penetration and a uniform diffusion of the preservative through the treated area can be assured only by pressure treatment according to standards of the American Wood Preservers Assn. Full length treatment too, is becoming increasingly important because of the depth of sapwood on most pole timber available today. Untreated sapwood of any species is subject to early decay. Decay even in the earliest stages before it can be detected by casual inspection causes serious loss of strength in poles. Then, too, sapwood that has started to decay becomes a hazard to linemen climbing the poles.

37 *Years* — 98 *Percent In Use*

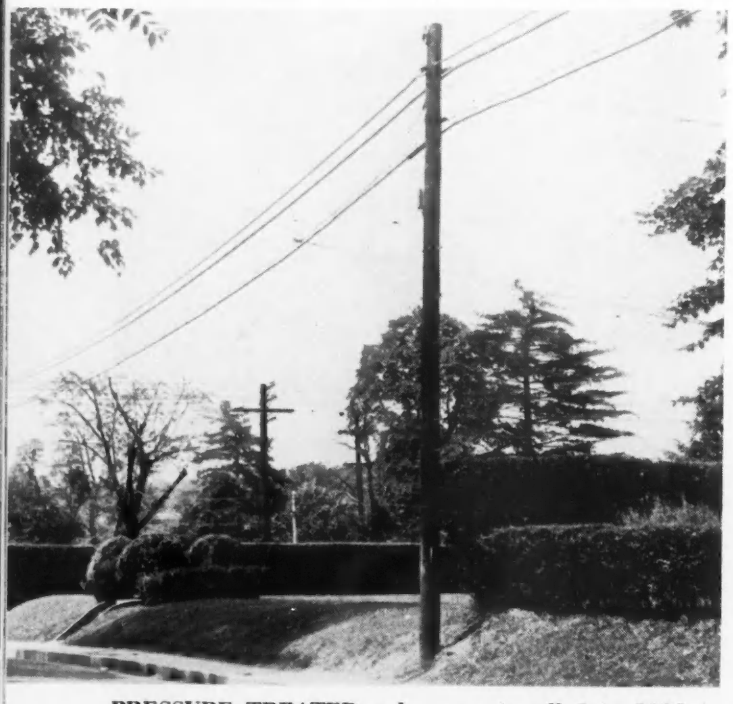
AN OUTSTANDING service record has been run up by one line of 3,029 poles of the New York, New Haven & Hartford Railroad between New York City and New Haven, Conn. (*Wood Preserving News*, October, 1934). Carrying one to three cables, these poles are 20 ft. long and spaced 100 ft. apart in various types of soil — gravel, rock, clay and marshland. Installed in 1918, these pine poles had received pressure treatment with creosote to a retention of 12 lb. per cu. ft. by the full cell process. Only 54 poles, or 1.78 per cent, have been removed because of decay up through the year 1955 — a period of 37 years service life. The average physical life of poles in this line has been estimated at 60 years!

G. N. Loomis, assistant superintendent of communications of the New Haven, reported in September as follows: "Of the 3,029 poles originally installed, 257 have been removed because of side tracks, sale of

C. C. WHITE was photographed in 1954 inspecting one of the creosoted poles set in 1916 by Georgia Power Co. between Norcross and Porterdale. After 38 years, average annual replacement was only 1.3 per cent.



28 YEARS OLD when photographed in 1954, these pressure treated poles of Houston Lighting & Power Co. were set in 1926 between Wallis and Sealy, Tex. Of the original poles more than 94 percent remained in good condition. Five or 10 more years' life is expected.



PRESSURE TREATED poles were installed in 1930 in Baltimore by Chesapeake & Potomac Telephone Co. Today the company has 39,000 such poles installed and is using them exclusively in replacements and extensions. It estimates service life will be at least 40 years.

property, or highway construction. Of the remaining 2,772 poles, 54 have been replaced because of decay as follows: 1933-5; 1941-10; 1945-4; 1948-12; 1951-11; 1954-2; 1955-10." He advised that most of the renewals because of decay were due to groundline decay with a few due to top rot.

It is believed many of these old poles will be removed soon if they have not already been removed to make room for construction of the New England Throughway. Some of the communications cables will be put underground and some will be moved to permit new construction.

32 *Years — 90 Percent In Use*

ANOTHER splendid service record has been reported from Kansas, (*Wood Preserving News*, August 1953). In 1921 the United Power & Light Co. installed 121 Southern pine poles for a six-mile electric power transmission line between Hillsboro and Lehigh, Kan.

These poles were 35 ft. long with top diameters of 7 to 7¾ in., and it is believed they were pressure treated by empty cell process with an 80/20 creosote-coal tar solution to a final retention of 8 lb. per cu. ft. In 1929 changes were made in the capacity of the power line and in the network, and a few poles were removed, but none for reasons of decay. Ownership has changed since then. But an inspection made in 1953 disclosed that only 10 per cent of the original 121 poles had been replaced for all causes including lightning, decay, line and grade changes.

Thus after 32 years, 90 per cent of these pressure treated poles were still in service, and no renewals of any consequence were expected in the near future.

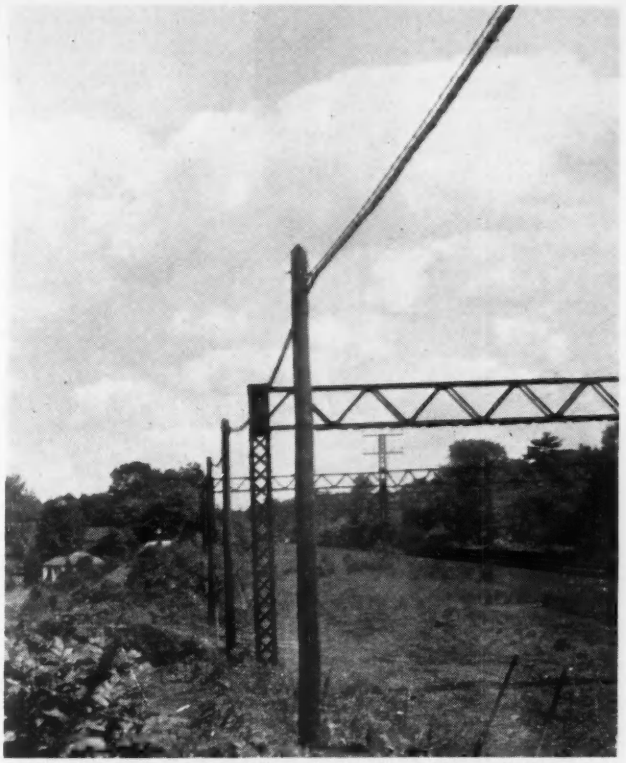
More than 95 per cent of the pressure creosoted poles between Washington Court House and Leesburg, Ohio, were still in service during an inspection made after 27 years. They were installed by Dayton Power & Light Co. in 1927. Officials of the utility company can recall only one replacement in the line due to rot at the groundline. Other replacements were the result of line improvements.

Texas Case Histories

TEXAS POWER & Light Co. has enjoyed very good performance from 196 creosoted pine poles between Mertens and Malone, inspected in 1954. These poles had been set in 1916 to replace untreated poles that had given less than 15 years of service. After 38 years only 6 per cent of the pressure treated poles had been replaced, mostly for casualties other than decay. Texas Power & Light Co. believes there are eight to 10 years of life left in the remaining poles.

After 28 years over 94 per cent of the pressure creosoted poles in a line of Houston Lighting & Power Co. were giving good service. This was found in another 1954 inspection. Between Wallis and Sealy, Tex., 260 pressure creosoted poles were installed in 1926. Later 13 were replaced to give greater height. Of the 247 remaining, 233 were found to be in good condition with a future life of five to 10 years more reasonably anticipated.

Houston Power & Lighting Co. first used pressure treated poles in 1921 and conversion has been complete now for more than 20 years. Southern yellow pine



ALMOST ALL poles of New York, New Haven & Hartford Railroad between New York City and New Haven, set 39 years ago in 1918, are still in service because of protection given by pressure treatment. Only 54 poles, or 1.78 per cent out of the original 3,029 were removed for reasons of decay up to last year.

and fir poles are treated with creosote to a retention of 10 lb. per cu. ft.

Other Power Lines

ANOTHER electric company which has been using pressure treated poles since 1913 is Duke Power Co., Charlotte, N. C. In 1928 this firm erected a 17.4-mile transmission line between Elkin and North Wilkesboro, N. C., with 512 pressure treated poles. A check in 1955 disclosed that 501, or over 97 per cent, of these poles were still in use after service of 27 years.

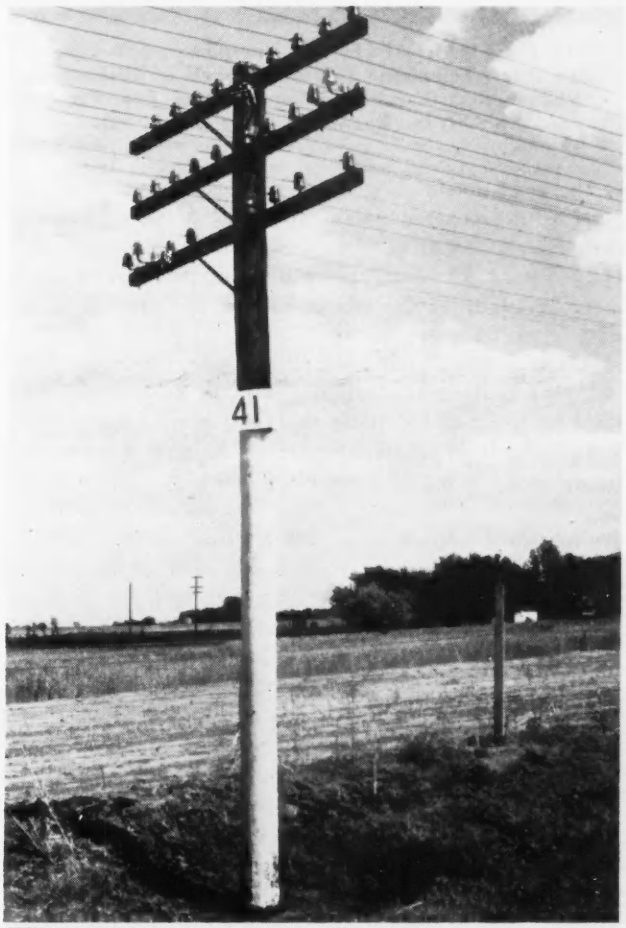
The 16-mile River Transmission Line between Highland and Newburgh, N. Y., of Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y., has been in service since 1928 and 1929. As of last year only 10 poles out of 302 had been replaced, and only one because of decay. Boring tests showed the poles are still sound.

More than 100 pressure creosoted poles in the Fulton Springs-Kimberly line of Alabama Power Co. are still in service after more than 40 years! Originally a radial feeder, this line was constructed in 1914 with 600 pressure creosoted poles. In 1924 it was rebuilt with longer spans. At that time more than 200 of the original poles were reset in other locations. Over the years replacements have been made in the original group of poles with deterioration accounting for a very small percentage. But 109 original poles were still in service in 1954.

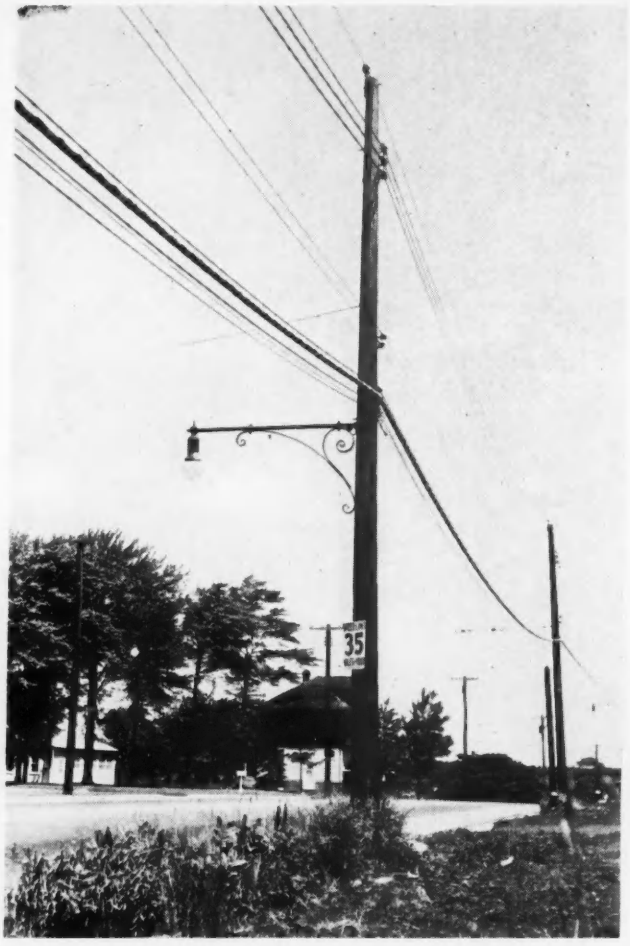
Oldest Telephone Line

REPORTED to be the oldest telephone line in the country, the American Telephone & Telegraph Co. line between Richmond and Suffolk, Va., has set one

SHELL ROT, which endangers linemen and cuts pole life, can be seen on a pole which had only butt treatment. This occurred between Prince Albert and Saskatoon, Sask., supposedly a dry region of the Canadian plains. Pressure treatment would have protected outer sapwood against such decay for full length.



THIS POLE set in a Western Union line near Lawrence, Kan., was later painted with aluminum sealer and white paint. It was photographed in 1953 after 21 years.



MOST REMARKABLE and complete service record of pressure treated poles was made by three sections of New York Telephone Co. in Borough of Richmond, Staten Island, New York City, set in 1898. Inspection in 1952 showed that 208 of an original 243 were still in service. Today they are 58 years old. A typical pole shows scars from linemen's spurs but is still sound. Two sections are heavily loaded for joint use, carrying telephone cable, power lines and highway lighting brackets.

of the most outstanding service records. It was built in 1897 with creosoted poles. Up to 1953 there were approximately 2,900 out of 3,806 poles still in service. Only 3 per cent of the poles were marked for replacement in 1953, leaving about 73 per cent still in active duty after 56 years.

A few years ago it became necessary to raise these poles by bolting the original pole to a stub. At that time portions of the poles that had been underground were found in excellent condition and capable of many more years of service.

Remarkable Record of 58 *Years*

PERHAPS the most remarkable service record of utility poles has been chalked up by three 58-year-old line sections of the New York Telephone Co. in the Borough of Richmond, Staten Island, New York City. (*Wood Preserving News*, March 1939 and November 1952). About 40 ft. long, these poles have 14 to 15-in. butt diameters and 6-in. top diameters. They were pressure treated with creosote by full cell process to a retention of 12 lb. per cu. ft.

Line 1 originally consisted of 56 poles of which 35 were located on the north side of Victory Boulevard between Richmond Avenue at Bulls Head and Willow Brook Road where the line crossed the boulevard and continued east. On inspection after 41 years of service, it was found that only one of the 56 had been replaced. This was due to an automobile collision, and the broken pole showed no decay whatever. An inspection in October 1952 disclosed that the 35-pole section had been removed since 1939 to make way for a new pole power line and the disposition of the poles is not known. Only two of the 21 poles in the other section had been replaced in spite of two resettings of this section.

Line 2 consisted originally of 88 poles. This is a joint line carrying telephone cable, power lines, and highway lighting brackets along the east side of Richmond Avenue from Richmond Hill Road south to Arthur Kill Road. By 1939 after 41 years four poles had been replaced. By the 1952 inspection 11 more poles had been replaced. Thus in the first 54 years only 15 out of 88 poles, or 17 percent, in this section had been replaced.

Line 3 extends along the north side of Arthur Kill Road from its Richmond Avenue intersection west toward Tottenville. This is another joint-use line carrying telephone cable, guy attachments, and power lines on crossarms. In 1939 this section had 122 original poles and 12 replacements since 1898. The inspection in 1952 disclosed that 116 out of the original 122 poles were still sound and in service after 54 years. Six replacements had been made since 1939. Of 134 poles set in 1898 only 18 poles, 13½ per cent, had been replaced.

Therefore, of the 243 poles originally set in three line

sections in 1898 (omitting 35 poles in Line 1 not accounted for) there remained in 1952, 208 poles and 35 replacements. Therefore replacements amount to only 14.4 per cent after 54 years of continuous service.

A spot check of the poles in Lines 1, 2, and 3 revealed complete evidence of soundness above the groundline as well as at the groundline. The poles were straight and in excellent condition, giving promise of even more years of useful life.

Experience in Severe Conditions

THE EXPERIENCE of Gulf States Utilities Co., Beaumont, Tex., with pressure treated poles has been favorable, despite the extreme conditions in its territory that favor decay—heavy rainfall, high temperatures and humidity. This was brought out in a paper before the American Wood Preservers Assn. in New Orleans last April by Ralph Cargill, vice president, operations and engineering (*Wood Preserving News*, June, 1956, page 6.) "Depreciation of a wood pole," he said, "is usually reckoned on a 30-year life cycle." Even though the severe conditions led to raising the retention in 1940 from 8 lb. to 12 lb. per cu. ft., many of the poles set before 1940 with a retention of 8 lb. are still in service after 25 or 30 years.

Commenting on this paper, Ralph E. Meyers, vice president, International Creosoting & Construction Co., Galveston, Tex., said the experience of Gulf States Utilities Co. demonstrates conclusively that it pays to buy the longest life possible, because this commodity, like others, advances in price and installation costs also rise continually over the years. "It contradicts the thinking of that rare buyer who feels that mediocrity will suffice and seeks to purchase in the bargain basement."

Outstanding Examples

OTHER outstanding examples of long-life from pressure treated timber poles in utility lines include:

Ohio Edison's power line between Akron and Bedford, Ohio, more than 42 years old without a single replacement! Recently because additional pole height was needed, some of the shorter poles were sawed off just above groundline, and inspectors were amazed to find poles completely sound.

Georgia Power Co., impressed by the service and sound condition of poles set 29 years ago and still in line service, are continuing to install pressure creosoted poles at the rate of approximately 500 per year.

Poles set by United Power & Light Corp. in 1917 for a short transmission line near Abilene, Kan., and reset in 1932 in a new line running three miles south of Sand Springs, were still sound after 7 years, it was found on a check in 1954. Only 10 poles out of 71, or 14 per cent had been lost from all causes, five due to lightning damage and three due to line changes. These poles had been treated with only 6 lb. of an 80/20 creosote-coal tar solution. (*Wood Preserving News*, July 1954, page 28).

Creosoted poles up to half a century old removed by the British Post Office Department a few years ago were mostly sound and sent for retreating, thence to be installed in new transmission lines. About 1,000 poles dating back to 1892, 1897, 1898, 1900, and 1910 were removed. A careful examination revealed that only a small percentage had deteriorated so that they could not profitably be re-creosoted for re-setting. Those rejected were largely poles in which decay had started and spread from bolt holes where crossarms were attached or those in which objectionable shake had developed. It is believed these poles had been pressure treated by full cell process with creosote to a retention of 12 lb. per cu. ft. (*Wood Preserving News*, December, 1948, page 146, and May 1949, page 62.)

32 YEARS OLD at the time they were inspected and photographed, these poles are in a line of United Power & Light Co. between Hillsboro and Lehigh, Kan. As of 1953, only 10 per cent of 121 original poles had been replaced for all causes including lightning, decay, line and grade changes.

These different service records were achieved through preservative protection with pressure treatment, which insured adequate depth of penetration and uniform distribution of preservative through the pole leaving no untreated spots.—*Reprinted from the December, 1956 issue of "Wood Preserving News."*

Worth Writing For

THE FOLLOWING publications are available from Superintendent of Documents, United States Government Printing Office, Washington 25, D. C. Send payment with order.

"*Tornadoes, What They Are And What To Do About Them.*" Tells how tornadoes are formed and gives information regarding safeguards to preserve life and property. Rev. 1957. (4) p. il. Catalog No. C 30.2:T 63/4/957. 5 cents.

"*Tornado Safety Rules.*" A flyer with tornado information printed on the reverse side. Presents origin and description of tornadoes, and protective measures to guard against them. Rev. 1957. 8 x 10.5 in. Catalog No. 30.6:T 63/2/957. 5 cents.

"*Housing In The United States.*" A Graphic Presentation. It is the purpose of this booklet to present graphically some of the highlights of housing in the United States — the population pressures affecting housing, what our inventory is like, the volume and importance of new home production, the role played by the Government in the housing market, and something of the nature of the home building industry. 1956. 76 p. il. Catalog No. HH:H 81/27. 50 cents.

...did you see this news about small manual exchanges?

TROUBLE CLEARING

Facts & Fallacies About Magneto Service

By L. N. MARTIN

PART 35. The preceding article in this series appeared on page 28 of the Feb. 16 issue.

WHY SHOULD we be writing about the magneto telephone at the present time? Many magneto exchanges are still in service. On Jan. 1, 1956, Independent telephone companies had approximately 4800 magneto exchanges. That was about 44 per cent of the total of Independent exchanges, including the large city exchanges. Magneto boards are now found only in small offices, with one-position boards predominating. If we should compare the number of magneto exchanges to the total number of *small* exchanges, this percentage would probably run much higher.

Now, even if we grant that the last of these exchanges will have disappeared from the scene within the next few years, each one must be maintained during the remainder of its life.

Each magneto exchange is very important to the community it serves. It furnishes the *only* telephone service these people have and they are entitled to the best service the company can furnish.

Good service is also *good* business for a company. It attracts new customers, more toll business, and more auxiliary business, such as extension telephones, hence revenues are increased.

Where public opinion is forcing a small company to convert to automatic operation, before it is ready to take that step, the public reaction has probably been generated by *poor* magneto service. Unless that company mends its ways the service will continue to be poor and its public relations will not improve no matter what kind of a switchboard they install.

The owner of a magneto exchange should understand that he *can* give good service with his present plant. He should know that many of the derogatory statements made about magneto service are untrue.

On the other hand, he should be acquainted with the real shortcomings and limitations of the magneto system and try to offset them whenever possible.

The popular opinion is that magneto lines are always noisy, crosstalk is prevalent, and transmission is poor. Now, a telephone man should know that these conditions are in the outside plant and have nothing to do with the magneto switchboard or the magneto telephones.

This trouble would actually become worse if the plant were cut over to automatic without correcting the outside plant conditions.

The first step in an automatic cut-over is to thoroughly overhaul the outside plant. If that must be done before a cut-over, why not do it *now* and give *good* magneto service in the meantime.

Transmission over a magneto line is just as good and sometimes better than that over an equal common battery line. We must remember that toll lines are like magneto lines in that they carry no battery current. However, the dry cells in the magneto telephone must be in good condition to attain good transmission.

The magneto switchboard requires a human operator. One fault of the magneto system is that the operator does not get a disconnect signal when the subscriber hangs up. To give good service she must "listen in" on all connections at frequent intervals and "challenge" if she does not hear a conversation. Now, this is no excuse for poor service. The operator must be trained in magneto operation and she cannot be expected to handle as many lines as she would on a common battery board.

The automatic board substitutes a mechanical operator for a human operator. There are arguments in favor of each. When an operator makes a human mistake, such as ringing a wrong number, we may wish for a mechanical operator.

However, the automatic board does not eliminate wrong numbers. It merely transfers the chance for a human error from a trained operator to an untrained subscriber. (Note: "Wrong number" and similar reports increase after a cut-over to automatic. They decrease again in time but are never eliminated.)

On the other hand, when some emergency comes up, we may wish for the prompt and effective action of an intelligent human operator. Every few days we read in the papers how a courageous and quick thinking operator has saved life and property. Some of these women receive medals and other awards for their acts. However, so far as we can learn, no medal has yet been awarded to an automatic switchboard.

Now, the foregoing discussion of operators is not intended to prove anything. However, it does remind us of the old saying, "You can't eat your cake and have it, too."

Some small exchanges have trouble obtaining suitable operators. One company, with which we are well acquainted, is converting to automatic solely because it cannot obtain operators in its community. On the other hand, companies which have no trouble in getting excellent operators at reasonable wages.

If, someday, the federal wage-hour law is changed to eliminate the present 750-station exchange operator exemption, many small companies operating manual exchanges will be in hot water. If they were forced to pay the minimum wage rate to operators, on a 24-hour basis, their operators' wages would exceed their gross revenues.

We are not prepared to discuss this point in the present article. However, in the final analysis small companies must give their subscribers good telephone service and the companies must earn a reasonable return on their investment.

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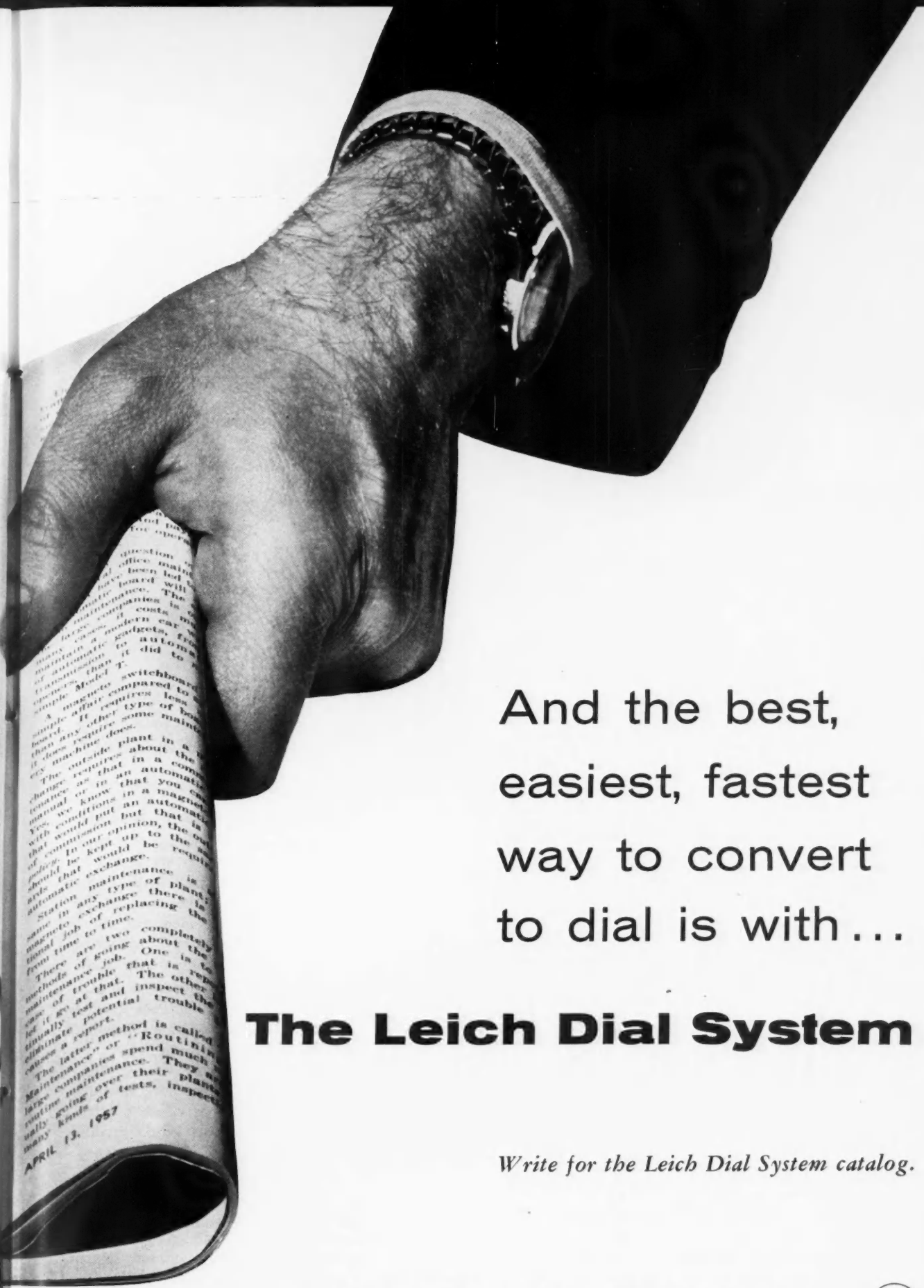

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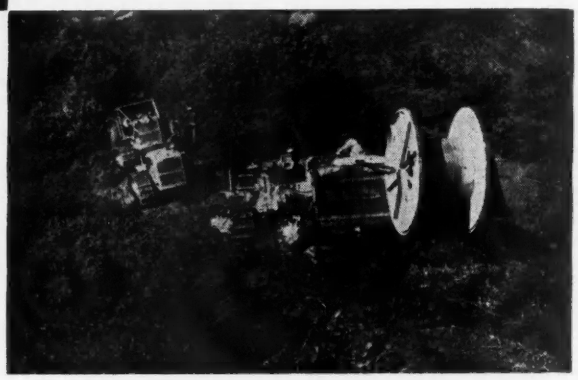

CHAPTER TEN OF Mr. Reed's article discusses: (1) Messenger strand for telephone cable (2) pole requirements for aerial cable; (3) cable pole spacings; and (4) tension and sag data for short span cable construction.

By JOHN S. REED

Messenger Strand for Telephone Cable

VARIOUS kinds of telephone cables have been discussed, together with methods of attaching the cable to the messenger when the latter is used. This section of the series will cover methods of placing messenger strand for supporting telephone cable. (Messenger strand is also referred to as suspension strand or supporting strand.)

Although messenger strand should have adequate strength to support its cable under all conditions, it should not be installed with too much or too little tension. The strand should be placed with the correct tension and the cable stretched to the proper extent while lashing it to the strand, when the temperature falls below a specified minimum, as explained in previous sections of this series. This will prevent the formation of bows or waves in the cable on temperature rises as the result of differences in expansion rates of the lead covered cable and steel strand.

Insufficient strand tension is undesirable in that it produces slack spans, which makes it difficult to obtain the proper ground clearances, and adds to installation costs by requiring taller poles than would be otherwise needed. Excessive sags in spans of cable also increases the tendency of cable to dance under ice loads in locations of exposure to high winds, particularly so when long spans are involved.

It is also important to maintain the proper tension of the supporting strand after the initial installation. Correct guying of the lead, especially at dead end points contributes to the maintenance of the desired tension. This section will cover proper guying procedures in addition to the installation of messenger strand.

Acknowledgement is given to the *Rural Electrification Administration* for much of the information relative to pole strengths and spacings, and long average spans of telephone cable, to *Indiana Wire & Steel Co.* for long span data using galvanized steel strand and to *Copperweld Steel Co.* for data on Copperweld strand.

Pole Requirements

THE STRENGTH of the poles employed in an aerial telephone cable lead is an important factor in maintaining the strength of the cable lead. Not only must they support the cable load, but they must also resist the bending stresses resulting from workmen and equipment on the cable. Thus a cable splicer and splicing platform, together with ladders leaning against the strand, and a slack puller placing additional tension in the messenger to temporarily relieve stress in the cable at a splice point produce a significant loading effect, particularly if the splice is in the middle of the span.

This concentrated load causes the poles on each side of the span to deflect towards each other. The bending effect is usually greater than that produced by the maximum storm loading condition specified for the heavy loading district. It should be noted here that the cable splicer usually is aware of this fact and will relieve the stress to some extent by

lashing a rung of his ladder to the messenger so that the ladder will support part of his own weight and the weight of the splicing platform. A man riding the cable in a cable car or in a cable spinning machine will also produce a concentrated load between two poles causing a bending stress on these poles.

Engineering calculations and plant experience indicate that cable poles should not be less than Class 7 in size. Poles of this strength classification are more than adequate for most sizes of cable. This excess strength is justified by the fact that cable carries more circuits than open wire and it is much more difficult and expensive to repair cable damage resulting from pole breakage than to repair similar damage to open wire from the same cause.

When cable is placed on poles carrying telephone open wire, the additional load may be considered to be equivalent to four open wires where cable is supported on 6,000-lb. strand, five open wires for cable on 10,000-lb. strand and six wires for cable on 16,000-lb. strand messenger. These factors are combined with the open wire equivalent to determine the proper size of poles for supporting the combination of open wire and cable in the lead.

Pole heights depend on the depth to which the pole is set, the sag of the cable spans, the minimum required ground clearance, and the distance between the strand attachment to the pole and the top of the pole. Where joint construction is involved, the clearance between the telephone cable and power facilities on the pole must also be taken into consideration.

Poles for carrying cable are set the same depth as those employed for supporting open wires. Thus, a 20-foot pole will be set in the soil to a depth of 4 feet; a 25-foot pole, 5 feet; a 30-foot pole, 5½ feet, and a 35- and a 40-foot pole, 6 feet.

Table XXV — Data on Sizes, Weights, and Reel Lengths of Lead Sheathed and Plastic Sheathed Cables.

Number of Pairs	Approx. Dia. In Inches and Weight per Foot in Pounds								Approx. Reel Lengths			
	26		24		22		19		26	24	22	19
	In.	Lbs.	In.	Lbs.	In.	Lbs.	In.	Lbs.	Ft.	Ft.	Ft.	Ft.
Lead Sheathed Cables												
6	-	-	-	-	-	-	.4	.4	-	-	-	2800
11	.3	.3	.4	.3	.4	.4	.5	.6	3500	3300	3500	3000
16	.4	.3	.4	.4	.5	.5	.6	.7	3300	2900	3500	4000
26	.4	.4	.5	.5	.6	.6	.7	.9	4000	4500	4200	3000
51	.5	.6	.6	.7	.7	.9	1.0	1.5	4200	4200	3000	2500
76	.6	.7	.7	.9	.9	1.2	1.2	2.0	3700	3000	2400	2200
101	.7	.8	.8	1.1	1.0	1.5	1.3	2.5	3500	3000	3000	1700
152	.8	1.1	.9	1.4	1.2	2.0	1.6	3.4	2400	2800	1700	1400
202	.9	1.3	1.1	1.7	1.3	2.5	1.8	4.3	2500	2200	1600	1400
303	1.1	1.8	1.2	2.3	1.6	3.5	2.2	6.0	1600	1600	1400	900
404	1.2	2.2	1.4	2.9	1.8	4.3	2.5	7.7	1600	1400	1200	700
455	-	-	-	-	-	-	2.6	8.5	-	-	-	650
606	1.4	2.9	1.7	4.0	2.2	6.0	-	-	1400	1100	900	-
Plastic Sheathed Cables — Paper or Pulp Insulated												
6	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	.6	.18	-	-	-	-
16	-	-	-	-	.6	.15	.7	.2	-	-	3500	4000
26	-	-	-	-	.7	.2	.8	.3	-	-	4200	3000
51	.6	.15	.7	.2	.8	.3	1.1	.6	-	4200	3000	2500
76	.7	.2	.8	.3	1.0	.5	1.3	.9	-	3000	2400	2200
101	.8	.3	.9	.4	1.1	.6	1.5	1.2	-	3000	3000	1700
152	.9	.4	1.1	.6	1.3	.9	1.7	1.7	-	2800	1700	1400
202	1.0	.5	1.2	.8	1.5	1.2	1.9	2.2	-	2200	1600	1400
303	1.2	.8	1.4	1.1	1.7	1.7	2.3	3.2	-	1600	1400	900
404	1.4	1.0	1.6	1.4	1.9	2.2	2.7	4.3	-	1400	1200	-
455	-	-	-	-	2.1	2.6	2.8	4.8	-	1100	-	800
606	1.6	1.4	1.9	2.1	2.3	3.2	-	-	-	900	1000	-
Plastic Sheathed and Plastic Insulated Cables												
6	-	-	-	-	-	-	.51	.126	-	-	-	5000
11	-	-	.44	.102	.46	.116	.53	.170	-	5000	5000	5000
16	-	-	.52	.137	.54	.155	.70	.256	-	3000	3000	3000
26	-	-	.67	.214	.70	.242	.81	.375	-	5000	5000	5000
51	-	-	.905	.393	.95	.448	1.09	.700	-	3000	3000	2500
76	-	-	1.06	.540	1.11	.621	1.30	1.024	-	2500	2000	3000
101	-	-	1.21	.710	1.31	.828	1.53	1.37	-	2000	3000	3000
152	-	-	1.50	.925	1.60	1.10	1.85	1.725	-	1000	1000	1000
202	-	-	1.67	1.298	1.83	1.52	2.25	2.520	-	1000	2000	1000
303	-	-	2.10	1.861	2.21	2.175	2.63	3.434	-	1000	1000	1000
404	-	-	2.35	2.336	2.60	2.886	3.10	4.918	-	1000	1000	1000

Cable Pole Spacings

CABLE pole spacings are determined by the strength of the messenger strand, the weight and consequent sag of the cable, and the minimum ground clearance to be obtained for the cable. In joint construction, the spacings will be largely determined by the power company's own requirements for their power wires. In towns, these spacings will be relatively short, but in rural areas, they will be quite long, in the order of 250 to 450 feet.

Cable span lengths in town plant have generally been limited to 150 feet, though recent trend is towards span lengths of up to 200 feet depending on terminal locations, lateral or branch cable points, and size and layout of the city blocks. In practically all cases, the poles are jointly used by telephone and power companies and the pole spacings generally correspond to some multiple of standard lot widths such as 100, 125, or 150 feet.

Where jointly used poles are to be located along rear property lines in areas without alleys, it is desirable to place them on lot corners when possible. In such situations, the following pole locations are suggested:

Average Width of Lots — Feet	Poles Located At:	Resulting Pole Spacings
40	*Every 3 lots	120 ft.
	(Occasionally 4 lots)	(160 ft.)
50	*Every 3 lots	150 ft.
60	Every 2 lots	120 ft.
	(Occasionally 2½ lots)	(150 ft.)
75	Every 2 lots	150 ft.
100	**Every 2 lots	200 ft.
	(Occasionally 1 or 1½ lots)	(100 or 150 ft.)
150	Every lot	150 ft.

*Telephone drops need to be properly routed by means of span clamps on the messenger to avoid crossing other properties than the ones belonging to the subscribers connected

**One hundred-fifty foot spacings may be employ d with alternate poles located at a midlot line point.

Table XXVI. Resulting Sags of Cable Spans for Stringing Tensions of Messenger Strand (No Storm Loading)

Weight of Cable Lbs./Ft.	Sags in Inches for Air Temperatures in Degrees F.																	
	100 Ft. Span			110 Ft. Span			120 Ft. Span			130 Ft. Span			140 Ft. Span			150 Ft. Span		
	20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°	20°	60°	100°
On 6,000-Lb. Messenger at 1,100 Pounds Stringing Tension (60° F.)																		
.50	5	6	8	6	7	10	8	9	10	9	11	13	10	12	16	15	18	21
.75	8	9	10	9	11	12	11	13	14	13	14	17	16	17	19	18	21	24
1.00	9	10	11	11	12	13	13	14	16	14	17	19	17	19	22	22	24	27
1.25	11	12	14	13	14	17	16	17	20	19	20	24	22	24	28	24	27	30
1.50	12	14	16	14	17	19	17	20	23	20	24	27	24	28	31	27	29	31
1.75	13	15	17	16	18	20	20	22	24	22	26	29	27	30	33	29	31	33
2.00	15	17	18	18	20	22	22	24	26	25	29	30	30	33	35	32	36	39
On 10,000-Lb. Messenger at 2,000 Pounds Stringing Tension (60° F.)																		
2.25	13	14	16	15	17	18	18	20	21	20	22	24	23	24	27	26	28	31
2.50	14	15	17	16	18	19	19	21	23	22	23	25	24	27	29	28	30	32
2.75	15	16	18	17	19	21	20	21	24	23	24	27	26	28	30	29	31	34
3.00	15	17	19	18	20	22	21	23	25	24	26	28	27	29	31	31	33	35
3.25	16	18	19	19	21	23	22	24	26	25	27	29	28	30	32	32	34	36
3.50	17	18	20	20	21	24	23	24	26	26	28	30	29	31	33	33	35	37
3.75	18	19	21	21	22	24	24	25	27	27	29	31	30	32	35	34	36	38
4.00	18	20	21	22	23	25	25	26	28	28	30	32	31	33	35	35	37	39
4.25	19	20	22	22	24	26	26	27	29	29	31	33	33	34	36	36	38	40
4.50	20	21	22	23	24	26	26	28	30	30	32	34	34	35	37	37	39	41
4.75	20	21	23	24	25	27	27	29	30	30	32	34	34	36	37	38	40	41
5.00	21	22	23	24	26	27	27	29	31	31	33	35	35	37	39	39	41	44
On 16,000-Lb. Messenger at 3,600 Pounds Stringing Tension (60° F.)																		
5.00	14	15	16	16	18	19	19	20	22	22	23	25	26	28	30	30	33	36
5.50	15	17	18	18	19	21	21	22	24	24	26	27	28	30	33	31	34	37
6.00	16	18	20	19	20	23	23	24	26	26	28	30	29	31	33	33	36	39
6.50	18	20	21	21	23	25	25	26	27	28	30	31	31	33	36	34	37	40
7.00	18	19	20	22	23	24	25	27	29	29	30	32	32	33	34	35	38	41
7.50	20	22	23	23	25	26	27	29	30	30	33	34	34	36	39	37	40	43
8.00	20	23	24	23	26	27	28	30	31	31	33	35	35	37	39	38	41	44
8.50	21	23	25	24	26	28	28	30	32	33	35	36	37	39	40	39	42	45

Where long spans of telephone cable are involved, storm loading becomes an important factor from the standpoint of final unloaded sags. The longer the spans, the greater the difference between the initial and final unloaded sags. (This is the reason for providing information on initial and final sags in sag and tension tables for average long spans.)

It is interesting to note that a short span of cable will have less sag than longer spans on each side of the short span. Advantage is taken of this fact to place a short span of cable over a road with the spans on each side made correspondingly longer, the general practice being to make the road crossing span about half the length of the average span. This will assure a cable height over the road not less than the minimum required clearance without excessive crossing pole heights. Under ice loads, the greater weight of ice on the longer spans will cause the poles to lean towards the heavier spans, further decreasing the sag in the short span, and opposing the tendency for the

Table XXVII — Weight per Foot of 6,000-lb. (5/16") Galvanized Steel Messenger Strand with Plastic- or Lead-Sheath Cable in Place Plus Ice and Wind Loadings as Indicated.

	Messenger Strand, Cable and Lashing Wire or Rings Weight in Pounds per Foot				
	No ice, no wind	1/2" ice no wind	1/2" ice 4 lb. wind plus constants	1/4" ice no wind	1/4" ice 4 lb. wind plus constants
Plastic-Sheath Cable 0.25 lb. per ft.-0.70" dia. (lashed)	0.486	1.333	2.094	0.832	1.385
Lead-Sheath Cable 0.25 lb. per ft.-0.35" dia. (rings)	0.515	1.557	2.394	0.881	1.443
Plastic-Sheath Cable 0.50 lb. per ft.-1.00" dia. (lashed)	0.736	1.756	2.520	1.169	1.728
Lead-Sheath Cable 0.50 lb. per ft.-0.50" dia. (rings)	0.765	1.901	2.722	1.177	1.737
Plastic-Sheath Cable 0.75 lb. per ft.-1.20" dia. (lashed)	0.986	2.125	2.886	1.478	2.036
Lead-Sheath Cable 0.75 lb. per ft.-0.65" dia. (rings)	1.015	2.244	3.053	1.474	2.027
Plastic-Sheath Cable 1.00 lb. per ft.-1.40" dia. (lashed)	1.236	2.494	3.254	1.787	2.345
Lead-Sheath Cable 1.00 lb. per ft.-0.80" dia. (rings)	1.265	2.587	3.389	1.770	2.318
Plastic-Sheath Cable 1.25 lb. per ft.-1.60" dia. (lashed)	1.486	2.864	3.626	2.097	2.658
Lead-Sheath Cable 1 25 lb. per ft.-0.90" dia. (rings)	1.515	2.899	3.692	2.052	2.593

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Table XXVIII Weight per Foot of 10,000-lb. (⅜") Galvanized Steel Messenger Strand with Plastic- or Lead-Sheath Cable in Place plus Ice and Wind Loadings as Indicated.

	Messenger Strand, Cable and Lashing Wire or Rings Weight in Pounds per Foot				
	No ice, no wind	1/2" ice no wind	1/2" ice 4 lb. wind plus constants	1/4" ice no wind	1/4" ice 4 lb. wind plus constants
Plastic-Sheath Cable 0.50 lb. per ft.-1.00" dia. (lashed)	0.784	1.817	2.580	1.223	1.781
Lead-Sheath Cable 0.50 lb. per ft.-0.50" dia. (lashed)	0.784	1.535	2.260	1.082	1.583
Lead-Sheath Cable 0.50 lb. per ft.-0.50" dia. (rings)	0.813	1.969	2.788	1.236	1.793
Plastic-Sheath Cable 0.75 lb. per ft.-1.20" dia. (lashed)	1.034	2.185	2.945	1.532	2.088
Lead-Sheath Cable 0.75 lb. per ft.-0.65 dia. (lashed)	1.034	1.868	2.585	1.373	1.883
Lead-Sheath Cable 0.75 lb. per ft.-0.65" dia. (rings)	1.063	2.313	3.121	1.532	2.082
Plastic-Sheath Cable 1.00 lb. per ft.-1.40" dia. (lashed)	1.284	2.553	3.314	1.841	2.399
Lead-Sheath Cable 1.00 lb. per ft.-0.80" dia. (lashed)	1.284	2.201	2.916	1.665	2.164
Lead-Sheath Cable 1.00 lb. per ft.-0.80" dia. (rings)	1.313	2.656	3.457	1.829	2.376

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road span clearance to be reduced by the ice load.

Galvanized steel strand with six wires around a core wire, often referred to as "Utilities" or "Specifications" grade strand, is commonly employed for supporting telephone cable, also for guying poles. The following table lists the physical characteristics of this grade of galvanized steel strand:

Number of Wires in Strand	Nominal Diameter of Strand — Inch *	Nominal Diameter of Wires in Strand — Inch	Approximate Weight of Strand Per 1,000 Ft.-Pounds	Nominal Breaking Strength-Pounds	Actual Breaking Strength-Pounds
7	5/16"	0.109	225	6,000	6,000
7	3/8"	0.120	273	10,000	11,500
7	7/16"	0.145	399	16,000	18,000

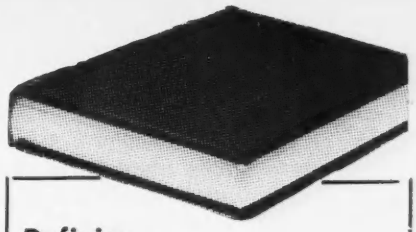
*A ½ inch strand of 25,000-lb. strength is occasionally employed for heavy cable in long spans or for heavy guying.

It is obvious that cable messenger strand should have at least the same life as cable. Strand life is governed by the thickness of the zinc coating or galvanizing. Galvanized steel strand is obtainable in different coating grades of which strand with Class A zinc coating is the most commonly used. Class B zinc coating is twice as thick as Class A and strand with this weight of galvanizing is employed near railroads, in industrial areas, and in sea coast areas. A "C" coating which is three times as thick as the "A" coating, is used on strand exposed to conditions of excessive corrosion. In some situations, a so-called corrosion-resistant (stainless steel) strand has been employed to overcome trouble from especially severe corrosion.

Galvanized steel strand is obtainable in coils of 250, 500, and 1,000 feet and in reels of 1,000, 2,500, and 5,000 feet, depending on size of the strand. The 1,000-ft. reels are usually most convenient for standard cable construction, though 2,500-ft. reels may occasionally be used in placing long straight lengths of messenger strand to minimize splicing.

Messenger strand requires careful handling to prevent damage through kinking or nicking. If the strand is wound on a reel, the reel should be set up on reel jacks, reel frame, or a reel trailer so that it will be free to

Please turn to page 42



Defining

6500 Terms commonly used in Electronics and related fields

Here is a well-illustrated dictionary containing clear-cut and accurate definitions of nearly 6500 terms used in radio, television, industrial electronics, communications, facsimile, sound recording, etc. This compilation of authoritative, readily understood definitions constitute the most comprehensive dictionary of its type available. There are more than 600 appropriate diagrams and sketches to illustrate the principles and equipment described.

ELECTRONICS DICTIONARY

By NELSON M. COOKE, Lieutenant Commander, U.S.N. (Retired); President, Cooke Engineerng Company; Senior Member, Institute of Radio Engineers, and JOHN MARKUS, Assocate Editor, *Electronics*.

433 pages, 5¾ x 8¾, over 600 Illustrations, $6.50

This comprehensive glossary should be of constant usefulness to electronics engineers, and to all who refer to electrical engineering terms in the course of their work. The definitions have been so written as to be of value to the most elementary technician or to the advanced radio engineer. Each definition is not only precise and accurate, but, in most instances, complete in itself.

Comprehensively covers terminology in the fields of

Radio
Television
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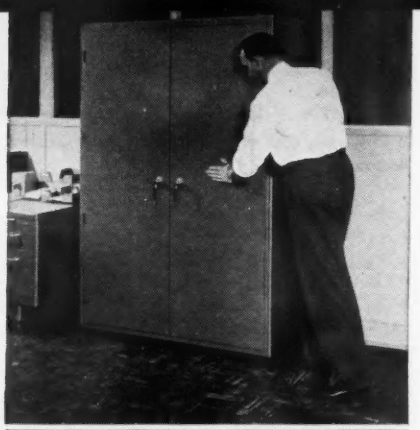
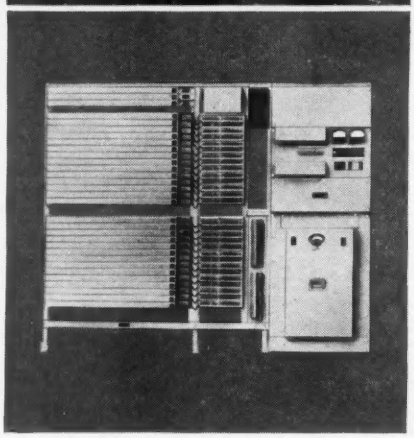


F-40 equipment cabinet easily rolls anywhere in office. Furnished in harmonious office gray, it is only 6′ 4″ high, 4′ 1″ wide, 2′ deep.



F-80 PBX is 6′ high, 7′ wide, 1′ deep. It is wired for night answering service; offers single party, restricted and "executive-right-of-way" service; provides conference and code call facilities. It has a capacity of 14 talking paths, 10 central office and 4 information trunks, and up to 80 lines.

"Our

W. R. Schaffner, left, secretary of The Sexauer Company of Brookings, S. D., watches Mayor Homer Dwiggins place a call on the company's new Stromberg-Carlson F-40 Dial PBX. In front of the Mayor is the cordless attendant's cabinet—about the size of a modern adding machine.

ur commercial customers are delighted," *said exchange manager*

"A joy to operate," *said user*

They're talking about the XY® F-40 Dial PBX.

Mr. Charles O'Neill, Manager of the Brookings (South Dakota) Municipal Telephone Exchange, recently installed an F-40 at The Sexauer Company, a local grain and feed firm. Mr. O'Neill reported that the customer is delighted with the efficient dial service provided by this compact PBX.

"The turret is a joy to operate," said Mrs. Marles Kangas, operator-receptionist at The Sexauer Company. "I'm amazed at the extra time it allows me for my other duties. Takes up so little space, too."

You'll find the F-40, with its capacity of 10 trunks, is the ideal answer to dial PBX service for medium-sized commercial offices. It provides manual intercept on incoming trunk calls; extension, hold and transfer facilities for up to 40 stations.

The Stromberg-Carlson F-80 Dial PBX (capacity up to 80 lines, 14 talking paths, 10 central office and 4 information trunks) is the F-40's larger companion. It is "tailored" for factories, large offices, schools, hospitals and other business and institutional subscribers.

For complete technical data and selling aids on both dial PBX's, call or write the Stromberg-Carlson sales office in your area.

S-C STROMBERG-CARLSON

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Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

GD GENERAL DYNAMICS

rotate as the strand is pulled off it. A coil of strand should be rolled on the ground to uncoil the strand. Any attempt to pull strand directly off a stationary reel or coil will cause the strand to kink.

The factors that influence the selection of the proper size of messenger strand for supporting cable are: (1) weight of the cable, (2) the maximum span length in the cable lead, and (3) ice and wind load. (The last is of the least importance where spans are relatively short.) The National Electric Safety Code specifies that the maximum installed tension of the strand shall not exceed 60 per cent of its rated breaking strength under maximum storm loading, to prevent permanent elongation or stretching of the messenger after loading. As an increased safety factor the maximum tension is usually limited to some lower figure, about 50 per cent, and the unloaded tension is made even less, around 25 per cent.

Data is provided in this article for short span and long span cable installations, the latter based on R.E.A. procedures.

Tension and Sag Data for Short Span Cable Construction

FOR TOWN AREAS, typical stringing tensions for galvanized steel messenger in spans of lead sheathed cable not exceeding 150 feet (200 feet for small size cables) would be as follows:

Size of Messenger Strand	Normal Stringing Tension at 60° F (pounds)	For Air Temperatures Other Than 60° F: Subtract for each 10° Above 60° F (pounds)	For Air Temperatures Other Than 60° F: Add for each 10° Below 60° F (pounds)
6,000-lb.	1,100	75	75
10,000-lb.	2,000	100	100
16,000-lb.	3.600	150	150

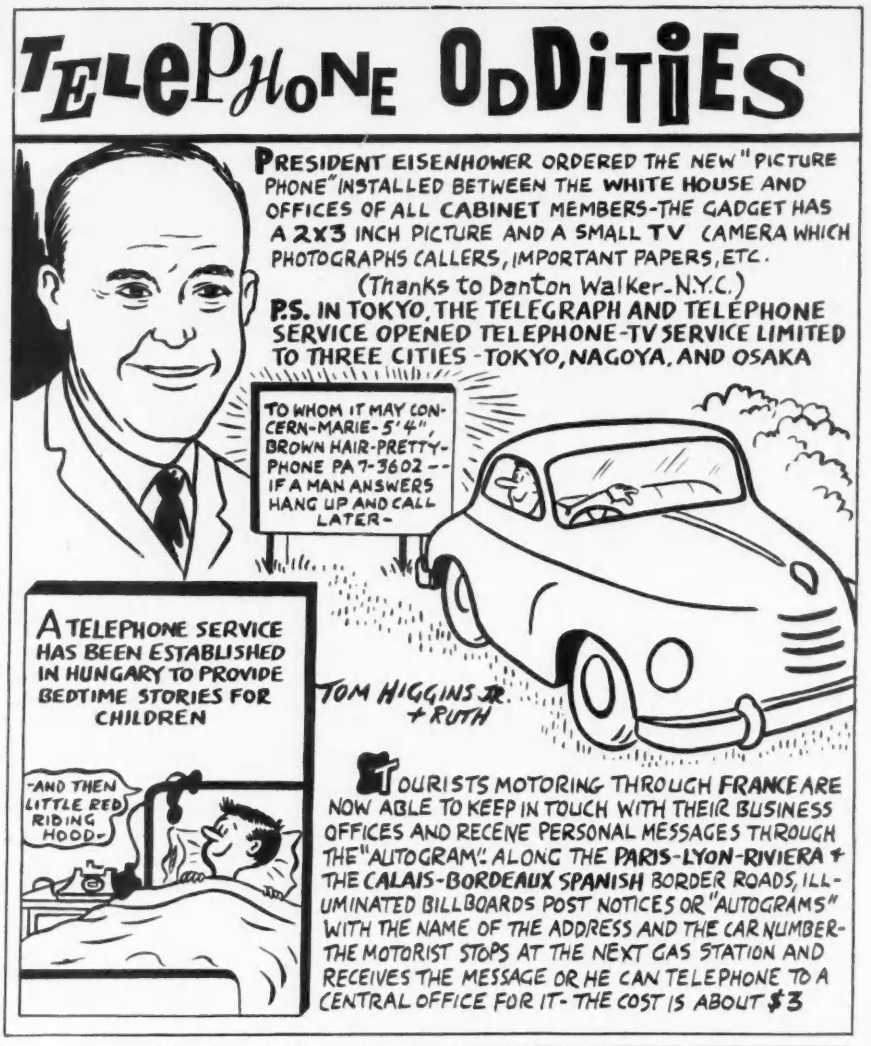
The stringing tensions in the foregoing table may be considered to provide a reasonable balance between the one extreme that tends to produce excessive cable bowing and the other that results in undesirably slack spans. Existing installations of 10,000-lb. and 16,000-lb. messenger may be found to have been strung at higher tensions in accordance with older methods and cable extensions may need to have the additional strand placed at the same tension as in the older cable sections.

The practice with respect to cable weight limits on different sizes of messenger as well as to stringing tensions varies with different companies. Typical requirements for short spans of lead-covered cable, 150 feet or under, with the foregoing messenger stringing tensions, would be the following: Cable on 6,000-lb. messenger not to weigh more than two pounds per foot, and for 10,000-lb. messenger, less than five pounds per foot. For cable weighing five pounds per foot or over, 16,000-lb. messenger would be placed.

Cable spans up to 200 feet may be placed with the same stringing tensions where the cable weight per foot does not exceed 1.25 pounds on 6,000-lb. strand, 3.5 pounds on 10,000-lb. strand, and 7 pounds on 16,000-lb. strand. The longer spans will also produce greater sags of the cable, which may not be desirable where proper ground clearances would be difficult to obtain without increasing the pole heights.

Table XXV lists the weights of telephone cables of various size of plastic jacketed and lead covered types and, in addition, the outside diameters and the standard reel lengths of the cables. From the weight information, the proper size of the messenger for the size of the cable to be placed can be determined.

After cable is lashed to the messenger, the resulting sags for spans up to 150 feet will be approximately as indicated in Table *XXVI*. These sags are initial unloaded sags, but because of the short spans involved, they are practically equivalent to final sags after ice and wind loading. Although necessarily approximate, this sag information will be found useful for determining probable clearances of the cable at high temperatures after installations. It will also be helpful in checking sags in maintenance operations.—*To be continued.*


TELEPHONE ODDITIES
PRESIDENT EISENHOWER ORDERED THE NEW "PICTURE PHONE" INSTALLED BETWEEN THE WHITE HOUSE AND OFFICES OF ALL CABINET MEMBERS-THE GADGET HAS A 2x3 INCH PICTURE AND A SMALL TV CAMERA WHICH PHOTOGRAPHS CALLERS, IMPORTANT PAPERS, ETC.
(Thanks to Danton Walker-N.Y.C.)
P.S. IN TOKYO, THE TELEGRAPH AND TELEPHONE SERVICE OPENED TELEPHONE-TV SERVICE LIMITED TO THREE CITIES - TOKYO, NAGOYA, AND OSAKA
TO WHOM IT MAY CONCERN-MARIE-5'4", BROWN HAIR-PRETTY-PHONE PA 7-3602 -- IF A MAN ANSWERS HANG UP AND CALL LATER-
A TELEPHONE SERVICE HAS BEEN ESTABLISHED IN HUNGARY TO PROVIDE BEDTIME STORIES FOR CHILDREN
-AND THEN LITTLE RED RIDING HOOD-
TOM HIGGINS JR. + RUTH
TOURISTS MOTORING THROUGH FRANCE ARE NOW ABLE TO KEEP IN TOUCH WITH THEIR BUSINESS OFFICES AND RECEIVE PERSONAL MESSAGES THROUGH THE "AUTOGRAM". ALONG THE PARIS-LYON-RIVIERA & THE CALAIS-BORDEAUX SPANISH BORDER ROADS, ILLUMINATED BILLBOARDS POST NOTICES OR "AUTOGRAMS" WITH THE NAME OF THE ADDRESS AND THE CAR NUMBER-THE MOTORIST STOPS AT THE NEXT GAS STATION AND RECEIVES THE MESSAGE OR HE CAN TELEPHONE TO A CENTRAL OFFICE FOR IT- THE COST IS ABOUT $3

Wisconsin Independents Meet

Wyman Wiswell Elected President: Pioneers Honor Miss Delta Linden

HARRIS G. ALLEN, President of the Wisconsin State Telephone Association, told members attending the 47th meeting of the organization that there should be no alarm regarding the solidity of the continuing demand for telephone service, that it is the result of a change in the American way of life.

He cited annual wages of $1,200 and $1,500 as average some years ago compared to scales ranging around $4,000 today and pointed to the insistence of the public for the improvements that have established the standard of living in the United States as the highest in the world.

He said, "No longer is the only color black when it comes to cars and phones; no longer can the public be told what it must have — instead its demands chart the course we must follow if we are to fill the needs their new standards have established for them."

Allen headed a list of speakers that addressed the group during its two-day session at the Hotel Loraine, Madison, on May 15 and 16. And in so doing he set a keynote of optimism and vigor that was sounded by those that followed him to the roster.

Chairman of USITA's Employment Relations Committee, Clyde McFarlin of Montezuma, Iowa, expressed the thought that revision of the hourly wage rate schedule was not likely to occur during this session of Congress but cautioned that efforts to tamper with the 750 station exemption are in earnest.

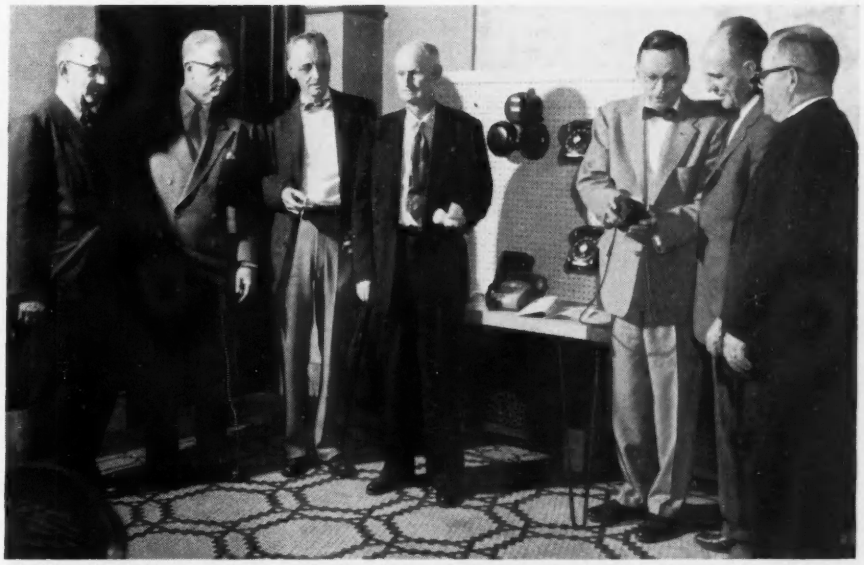
He predicted that the smaller companies are definitely in for rough going and possible erasure unless they take immediate steps to mechanize operations for the day of protection under the Federal Wage Hour Act is doomed to pass.

"The best we can hope for," he said, "is a short period of grace."

He counseled telephone people to analyze their operations and if they were serving relatively few stations, to look about for an opportunity to merge with nearby properties for he said that small units serving few customers are rapidly being pressed to prove themselves feasible economic entities. He observed that 1000 stations was about the number required for a healthy company today but emphasized that the trend toward bigness in all industry does not mean an end to the medium sized and smaller Independents.

"They can still get the job done faster and cheaper," he commented, "but must look to courageous and energetic management to handle it."

An actual example of courage was another speaker during the morning



G. W. COFFIN, president of the Council Grove (Ia.) Tel. Co. and a former member of the Kansas Association Board of Directors and his son, J. D. COFFIN, were in Madison at the time of the 47th meeting of Wisconsin telephone people and joined the crowd. Posing with them before a display in the Commercial Workshop are E. L. BEYL, Osceola; J. D. COFFIN; H. B. FLOWER, Wisconsin Rapids, association vice president; G. W. COFFIN; H. G. ALLEN, retiring association president; F. N. WILLKOMM, Lancaster, and WYMAN W. WISWELL, association president.

session, an attorney from Cadott, Wisconsin named Frank Huettner, Jr.

Huettner, who spoke from a wheel chair, was taken from the wreck of a high school bus in 1941, so badly injured only the most hopeful expected him to live. For 15 months he did not see a school text book but then by studying at home won his high school diploma. In 1944 he applied to the University of Wisconsin for admission to classes by home-to-school telephone.

Telephone engineers prepared an arrangement for Huettner, which he described as "a crude one by today's standards," and the state agreed to pay the rental. While authorities were dubious about the idea of attending college by wire, Frank was permitted to enroll at Eau Claire State Teachers College to test the scheme. He went through with straight A's and then moved to Madison and was hooked up to the university school of commerce and via telephone won a Phi Beta Kappa key. Next he enrolled in the university law school and in 1950 was admitted to the Wisconsin bar — the world's first telephone-schooled attorney-at-law. Today he practices at Cadott, a practice which has brought him to many cities throughout the United States though he can't walk.

Secretary Riordan's report dealt primarily with a bill utilities and co-operatives are sponsoring in Wisconsin to provide reimbursement for relocation of facilities along the proposed interstate road system. It was introduced in the Assembly on April 17th and met opposition from the State Highway Commission, Wisconsin Division of American Automobile Association, Automobile Dealers, Petroleum Industry and the Motor Carriers. Severest criticism came from the Highway Commission which stated the measure would take $6,000,000 from highway funds, 10% to be borne by the state — about $46,000 annually from state funds based on a 13 year program.

Riordan referred to the figure as a "guesstimate" stating it amounted to $12,000 per mile, a cost he termed "ridiculous in view of an assertion by the Highway Commission itself that most of the interstate system in Wisconsin will follow new right of

THE LARGEST group of women ever to attend a Wisconsin Convention was in evidence this year. Among those that attended the Ladies Party are MRS. HARRIS G. ALLEN, Milton; MRS. WYMAN W. WISWELL, Elkhorn; MRS. RALPH S. ODEGARD, Madison; MRS. J. F. BENJAMIN, Cumberland; MRS. L. J. ROBERTSON, Platteville; MRS. F. H. SCHAFER, Clintonville; MRS. A. H. BOWDEN, Almond and MRS. H. P. SIEBKEN, Madison. The women posed on the Edgewater Hotel dock which extends out into Lake Mendota in Madison.

WISCONSIN State Telephone Association Board Of Directors and Officers 1957-1958:—Left to right standing: G. A. RUTENBECK, Wisconsin Tel. Co., Milwaukee; E. L. BEYL, Osceola Farmers Mutual Tel. Co., Osceola; H. P. SIEBKEN, General Tel. Co., Madison; R. H. KEATING, Amberg Tel. & Tel. Co., Wausaukee; PAUL R. PARSONS, Rhinelander Tel. Co., Rhinelander; F. N. WILLKOMM, Farmers Tel. Co., Lancaster; Vice President, H. B. FLOWER, Wood County Tel. Co., Wisconsin Rapids; F. H. SCHAFER, Urban Tel. Co., Clintonville. Left to right — sitting: KARL MESS, JR., Price County Tel. Co., Phillips; R. S. ODEGARD, Menomonee Falls Tel. Co., Menomonee Falls; G. F. MOSER, Sharon Tel. Co., Sharon; H. G. ALLEN, Northwest Tel. Co., Tomah; President, WYMAN A. WISWELL, State Long Distance Tel. Co., Elkhorn; RAY J. RIORDAN, secretary-treasurer, WSTA, Madison; L. J. ROBERTSON, Platteville. Absent: J. H. HESSELMAN, Mondovi Tel. Co., Mondovi; D. E. PETERSON, Midway Tel. Co., Medford; E. B. SAMP, La Crosse Tel. Corp., La Crosse.

way where utility facilities will not be involved."

As the convention met, Riordan said, the bill was being subjected to review by the State's Attorney General.

Meanwhile, he urged members to make every effort to give the measure benefit of their support. He said the telephone industry in the state had a fine record, that in communities in which it operated it was most frequently the largest investor in the community's future and he cited the millions paid by it in taxes. "In the fight for reimbursement," he said, "we are only attempting to keep utility customers from contributing twice to the cost of highway construction, once in taxes and again in rates."

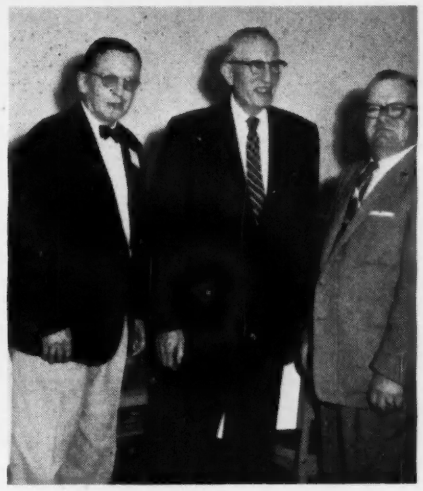
E. J. Schaefer, customer relations representative of the Wisconsin Telephone Co., brought new developments in the telephone industry to the audience during his lecture-demonstration entitled "Dial F for Future," among them the picture or television phone recently developed in the Bell Laboratories.

Again this year Workshops were a part of the Wisconsin Convention and proved especially popular. The conference dealing with Commercial problems with particular emphasis on sales was handled by D. W. Busse, commercial manager of the General Telephone Co. of Wisconsin. K. J. Jackson, Staff Member of the Public Service Commission Rates and Research Department responded to questions relating to regulation and tariffs.

The Plant meeting, directed by S. J. Kapitan, head of the Dodge County Telephone Co., dealt with general engineering design, rural distribution wire as compared with open wire, treated poles as compared with untreated, safety practices, troubles and other general items of interest to plant personnel.

For the first time a Traffic Workshop was arranged and was under the guidance of John F. Reding, traffic manager of the General Telephone Co. of Wisconsin.

In the course of business at Thursday morning's session three resolutions were passed by the membership, one reducing the number of directors on the board from 19 to 15 members, a move which will be accomplished over a three-year period, another commemmorating three members of the industry who died during



DISCUSSING telephone matters with Wisconsin Public Service Commission Chairman GEORGE STEINMETZ are HARRIS G. ALLEN, retiring president of the Wisconsin State Telephone Association and WYMAN W. WISWELL, Elkhorn, newly elected president.

the year — Herman Abelt, La Farge Telephone Co.; D. E. Riordan, Pulaski Merchants & Farmers Telephone Co., and Leslie H. Greiling of the New Francken Telephone Co.; and a third resolution, supporting passage of the bill before the Wisconsin Legislature that would provide reimbursement to utilities for relocation of facilities along the proposed interstate highway system.

J. H. Hesselman, treasurer of the Mondovi Telephone Co. and E. L. Beyl, president of the Osceola Farmers Mutual Telephone Co. were elected to the board. Directors reelected are: H. B. Flower, Wood County Telephone Co., Wisconsin Rapids; R. H. Keating, Amberg Telephone & Telegraph Co., Wausaukee; and H. P. Siebken, vice president, General Telephone Co. of Wisconsin, Madison.

Directors chose Wyman W. Wiswell, vice president and general manager of the State Long Distance Telephone Co., Elkhorn, to succeed Harris G. Allen as association president for the 1957-58 term, and H. B. Flower as vice president. Ray J. Riordan was named secretary-treasurer.

Some of the highlights of the 1957 Convention occurred during the luncheon conducted by the Independent Telephone Pioneers. The Pioneers played host to Governor Vernon W. Thomson who, in a short address, called attention to the Diamond Jubilee of the industry and cited the industry for its excellent accomplishments over the 60 year period.

He directed interest to the many "firsts" scored by the Independents and lauded their enterprise in Wisconsin where they installed dial exchanges as early as 1901 at Medford (served by the Midway Telephone Company), 1905 at Wausau, 1916 at Fifield and 1918 at Park Falls (all now served by General). The Governor was given a miniature telephone desk pen set and tie clasp with a small telephone engraved upon it.

Miss Delta Linden, an employe at General Telephone Company's Belleville exchange, was also commended

RAY W. SMITH (left), publisher of "Telephone Engineer & Management" and B. H. PIEPMEIER, who retired from the board of directors of the Wisconsin State Telephone Association engage in conversation at the Men's Golfing Party.

Photograph by Harold Halma

Troubled Lady... There's a tear on her pretty cheek but it will soon be gone. For troubles are forgotten quickly when one is very young.... Many a grown-up trouble also has a way of disappearing when there are friendly voices to help and reassure.... Just reaching for the telephone and talking to someone can bring sunshine into a dark or worried day.... For whatever the need or the hour, you are never alone with a telephone.... **BELL TELEPHONE SYSTEM**

An eloquent tear

Across the page we are reproducing in full a current Bell System advertisement which millions will see this month in national magazines. The ad is about a tear on a little girl's cheek, and about the part that telephone calls can play in brightening lives.

We believe that every telephone man and woman in America had a share in creating this warm and human advertisement. For behind the picture and the words there is a fact we can all be proud of—the priceless comfort of the telephone service we offer.

BELL TELEPHONE SYSTEM

Superior's

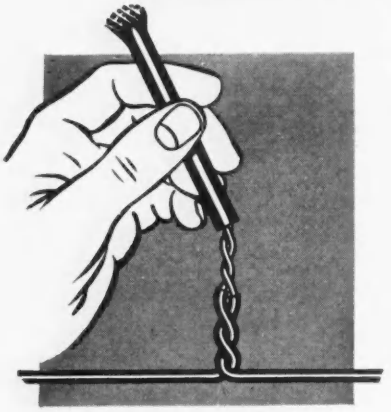
"Super-Splice"®

is

safe

and

sure!



"Super-Splice" makes splices waterproof . . . from inside out!

Sealed at one end, this plastic splice sleeve is filled with an insulating and waterproofing compound.*

Economical "Super-Splice," a Superior exclusive, makes the splice permanently as good as the cable . . . yet it can be re-entered easily. The compound never hardens or oozes out no matter what the temperature.

Prevent leakage currents and breakdowns in the presence of moisture...good for 25,000 v.d.c. Order "Super-Splice" NOW!

*A Dow-Corning silicone compound.

An REA Standard.

"Super-Splice" is available for use with straight, butt or bridge splices.

For further information on economical "SUPER-SPLICE", write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION
Hickory, North Carolina

during the luncheon for an act she had performed during her tour of duty at the switchboard one evening.

On answering a signal from a rural line last February, Miss Linden detected sounds indicating someone was in difficulty. She promptly set about to locate the source and upon doing so sent medical aid. The doctor found a farmer on the verge of choking to death. He had been dusting cattle during the day and inhaled some of the toxic dusting powder.

Miss Linden's timely action brought the doctor in time to administer an antidote. For her act above and beyond that expected in the normal call of duty Miss Linden received a cash award from the Badger Chapter of the Independent Telephone Pioneer Association. Mrs. Ethel Hoover, Chief Operator at Belleville, accepted the award for Miss Linden who was unable to attend due to a death in her immediate family.

The Pioneers of Wisconsin also paid honor to Miss E. M. Hiestand during the luncheon ceremonies. Miss Hiestand has served the organization long and faithfully, more recently as Secretary-Treasurer. Her interest in the Pioneers and efforts on behalf of the Badger Chapter have made it one of the largest and most active units in the country. In recognition of her diligence the membership presented Miss Hiestand with a white gold wrist watch.—*Ray Riordan.*

E. H. Royce Heads Nebraska Pioneer Group

E. H. ROYCE, Lincoln, Neb., was elected president of the Frank H. Woods Chapter of the Independent Telephone Pioneer Association in a statewide election conducted by mail last month. He succeeds Myra Metcalf of Lincoln.

Other officers elected were K. J. Boshart, Lincoln, vice president; Kathryn Portsche, Lincoln, secretary; and Carl Ahl, Lincoln, treasurer. A. S. Keckler and R. J. Connors of Lincoln were elected to three-year terms on the executive committee.

J. Earl Nelson Named Secretary, Nebraska Assoc.

J. EARL NELSON of Webster City, Iowa became secretary-treasurer of the Nebraska Telephone Association on June 1. He succeeded acting sec.-treas. Fred M. Strasser.

Nelson was associated with the

J. EARL NELSON

Northwestern Bell Telephone Co. from 1930 to 1951. Starting as an installer-repairman in 1934, he later worked on dial conversions as supply supervisor at Des Moines, Cedar Rapids, Iowa City and other points before becoming a commercial clerk at Webster City in 1934. He was manager at Vinton and Perry before becoming district plant supervisor at Waterloo in 1941 where he had plant supervision of 60,000 stations in 25 exchanges. While at Waterloo he supervised the installation of K and L carrier systems for Waterloo, Mason City and Ft. Dodge.

He became a contractor in 1951 in line clearance of trees for telephone and power companies and became an automobile dealer in 1953.

In recent years he has engaged in engineering and appraisal work for Independent telephone companies in Iowa, assisting in the appraisal of plant and laying out plans for line, cable and other requirements for dial conversions.

Born in Kossuth County, Iowa, Nelson graduated from the Milford, Iowa high school in 1925 and then attended Iowa State College in the study of general engineering. He worked part time for Northwestern Bell as a groundman and lineman while attending school.

Southwestern Bell Purchases Mulvane (Kans.) Tel. Co.

SOUTHWESTERN BELL TELEPHONE CO., has been granted a permit by the Kansas Corporation Commission to purchase the Mulvane (Kans.) Telephone Co., Mul-

New Catalog No. 451 Protector

Whether the need for a single pair lightning and static drainage unit is scattered or highly localized is best known to the folks who operate the telephone plant.

The term "buffer" has been used to describe such a protective unit and the term seems to be well suited to Reliable's new Catalog Number 451. Its function is to drain lightning and static discharges from open wires that are connected to cable and reduce the voltage at the cable junction.

The new unit protects protected cable terminals and will perform in front of unprotected terminals. It is also protection for loud speakers, coils, filters and such.

Here again Reliable engineers have studied both cause and effect and have designed a protector to take care of a problem that is recognized throughout the Communications Field.

RELIABLE ELECTRIC CO. • CHICAGO

Reliable

vane, Kans., south of Wichita, Kans., for $100,000.

The Mulvane exchange serves about 1,000 customers.

Bell also was given a certificate of convenience to assume the customers of the Lone Star and Clinton telephone exchanges and install dial service, linking about 300 customers to the Lawrence, Kans. exchange.

Lewis (Kans.) Telephone Co. Buys Garfield Telephone Co.

THE KANSAS Corporation Commission authorized that Lewis (Kans.) Telephone Co. to take over the Garfield Telephone Co. The company's lines were badly damaged by the March blizzard.

KCC Chief Engineer Lloyd Shank said the Lewis firm has awarded a contract for rebuilding the lines and converting service to dial. The company was authorized to borrow $128,000 to do the work.

E. R. Davenport Completes 50 Years of Industry Service

EDWARD R. DAVENPORT, equipment manager of the Orange County Telephone Co., Middletown, N. Y., was honored on May 16 by fellow employes and company officials on the completion of 50 years of employment with the company.

HONORED FOR SERVICE:—A half century of telephone company service was recalled recently by EDWARD R. DAVENPORT, standing, who is shown at Mitchell Inn as he was honored by fellow employes and officials of the Orange County Telephone Co., Middletown, N. Y. Left to right: AGNES V. ROWELL, elected secretary of board of directors; EDWARD R. DAVENPORT; CHARLES C. CHAPPELL, company president, and LEE I. HUNT, assistant general manager.

Mr. Davenport was the guest of honor at the monthly luncheon meeting of the company management group at the Mitchell Inn.

Charles C. Chappell, company president, presented Mr. Davenport a certificate of service, noting that this was the first 50-year certificate he has signed for an employe of the local company.

Mr. Chappell related how Mr. Davenport started with the company in 1907 at $10 per week as an "assistant." The company official said "he grew with the job and became of the greatest value to us."

GROUND FOR A NEW TELEPHONE BUILDING at David City, Neb., was broken in a ceremony May 20 by David City Mayor RICHARD ZEILINGER, at left, and MERLE M. HALE, vice president of The Lincoln (Neb.) Telephone & Telegraph Co. Witnessing the ceremony, left to right: GEORGE P. BARNEY, general plant superintendent; LLOYD W. CLEVELAND, general traffic superintendent; HAROLD HOSCH, editor of the David City Banner-Press; HARVEY ARMAGOST, area manager; HOWARD SPAHNLE, district manager; VERN CAMPBELL, area manager, retired; WILLIAM BROWN, general contractor; ARTHUR ESCHLIMAN, electrical contractor; ARTHUR FOX, president David City Chamber of Commerce; JAKE SINNER, heating contractor; ARTHUR CABLEHOUSE, contractor; PAUL H. HENSON, chief engineer; WALLIS BROWN, general contractor; THOMAS MORRISSEY, mechanical contractor; K. L. LAWSON, general commercial superintendent; PETER N. SCHLENTZ, former owner of the site; LEROY P. SCHLENTZ, special services supervisor.

Left to Right: DON G. ABEL, Chairman, Washington Public Service Commission; W. F. BARNETT, president, Washington Independent Telephone Association, presenting millionth telephone to Governor ALBERT D. ROSELLINI; BEN E. BOWLING, vice president & general manager, Pacific Telephone & Telegraph Company.

Millionth Telephone Installed In Washington State

THE TELEPHONE industry of Washington State did itself proud on May 22, 1957 when it commemorated the installation of the state's one-millionth telephone.

Governor Albert D. Rosellini accepted a bronze, non-working telephone model from the 60 telephone companies of Washington, symbolic of the million telephones in the State.

After accepting this symbol of progress the Governor turned it over to Mrs. Ida N. Burford, curator-director of the State Capitol Historical Association Museum, Olympia, where it will remain a permanent exhibit.

Don G. Abel, chairman, and Commissioner Francis Pearson, of the Washington Public Service Commission, were with the Governor at the ceremony. Presentation of the milestone telephone was made by William F. Barnett, president of the Washington Independent Telephone Association and president of the Vashon Telephone Corp., who acted for the State's entire telephone industry.

Others participating included Andrew J. Zimmerman, executive director of the Washington Independent Telephone Association; Ray Dalton, vice president, West Coast Telephone Co.; Ben Bowling, vice president and general manager, Pacific Telephone & Telegraph Co.; W. R. Jarmon, president, General Telephone Co. of the Northwest; and Arwin Davies, assistant vice president, Pacific Telephone & Telegraph Co.

To the industry's old-timers, Messrs. George Gaines, Cascade Telephone Co.; Wade Dean, Oregon-Washington Telephone Co.; W. C. Mumaw, Cohassett Beach Telephone Co.; Charles Hoy, General Telephone Co. of the Northwest; and R. W. Mize, Farmers Mutual Telephone Co., this occasion marked a long-dreamed of milepost in the progress of the industry in the area. Washington Territory received its first telephone service in 1883.

Lincoln T&T Completes Four Dial Conversions

LAST MONTH The Lincoln (Neb.) Telephone & Telegraph Co. completed dial conversion at Ashland, Carleton, Beatrice and Pickrell. The exchanges serve 6,920 stations.

Nebraska's first installation of direct distance dialing was ushered in with the Beatrice conversion. Subscribers at Beatrice, DeWitt, Filley, Pickrell and Plymouth can dial direct to about 250,000 telephones in 35 exchanges in southeast Nebraska. Calls from business telephones at Beatrice will be fully automatic. Other calls will require operator intercept for recording of the calling number.

New buildings are under construction also at Wahoo and David City.

KLEIN

preferred by linemen ... electricians

When it comes to leather goods for linemen or electricians, the name Klein today stands for the highest in quality as it has since the first wires were strung.

In Klein-Kord, too, Klein offers to industry the first specially woven fabric for safety straps—a fabric designed to permit the use of a tongue-type buckle without the risk of slitting or ripping under severe strain.

Now in Nylon Klein-Kord safety straps Klein still leads with the newest in safety equipment specially designed for use by utilities wherever power or communication lines are strung.

Write for Free Tool Guide

A free copy of the new Klein Pocket Tool Guide will be sent to anyone interested on request.

Ask your supplier

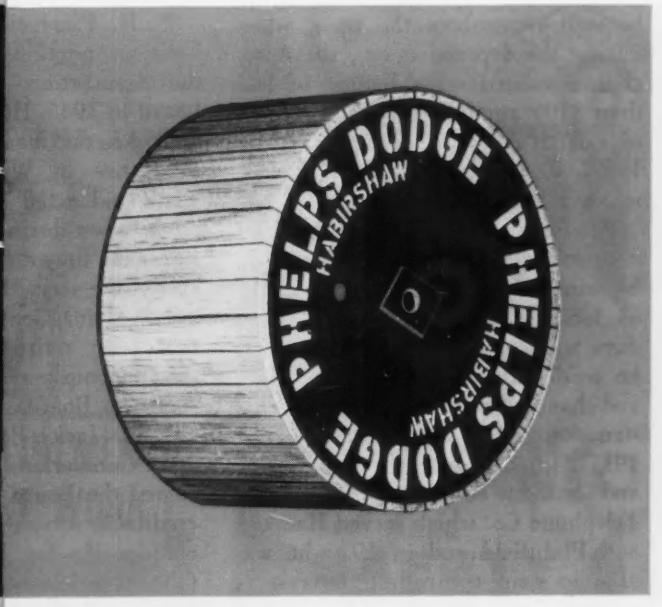
Foreign distributor: International Standard Electric Corp., N.Y.

Mathias KLEIN & Sons Established 1857 Chicago, Ill., U.S.A.

7200 McCORMICK ROAD • CHICAGO 45, ILLINOIS

Now... A Complete Line of Telephone Wire and Cable with the Famous Phelps Dodge "Mine-to-Market" Name!

- Highest grade copper from Phelps Dodge's own open-pit mines.
- Finest insulating materials for long-life service assured by exhaustive laboratory and field tests.
- Careful control of quality throughout fabrication to meet the most exacting specifications.
- Years of manufacturing experience in the communications field.
- Complete line of paper and plastic insulated telephone wire and cable to serve your needs.



PHELPS DODGE COPPER PRODUCTS CORPORATION

PHELPS DODGE COPPER PRODUCTS CORPORATION — MINE TO MARKET — P D

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Front Cover Story

Four Veteran Independents Retire From Wisconsin Association Board

Four veteran directors — Sanderson, Benjamin, Bowden and Piepmeier — retire from Wisconsin board.

OVER 60 YEARS of service to the Wisconsin State Telephone Association is represented by the four men shown on the front cover of this issue of TE&M. All retired from the Board of Directors this year. Reading from left to right is *T. H. Sanderson, J. F. Benjamin, A. H. Bowden* and *B. H. Piepmeier.*

Of the four, A. H. Bowden, popularly known as "Al" by his hundreds of friends in the industry throughout Wisconsin, holds the longest record of service. He was named a director in the late twenties and served as secretary-treasurer during the organization's early days. He said that he well remembers the time, when during the depression era, the Association existed on a budget of less than $700 annually, about 3 percent of what it costs to operate today. In 1948, 49 and 50 the membership selected him as president.

Al's career in the telephone business commenced 49 years ago when he joined the Almond Telephone Co. as local manager. Duties in those days were many and diversified for he tended the switchboard at night and handled maintenance and construction duties during the day. By 1917 Al had acquired a little capital and bought control of the Union Telephone Co. which served Hancock and Plainfield and in 1926 he was able to gain controlling interest in the Coloma Telephone Co. Three years later he picked up Bancroft, discontinuing the central office facilities there and trunking it into Plainfield.

His operations have been progressive. In 1939 he installed dial equipment at Hancock, the first mechanized central office equipment placed in service in Waushara County. In 1956 Coloma was converted and common battery plans are underway now at Plainfield which is a toll checking point.

While Al's service to the industry and Association have been long he's still energetic and faithful about participating in any affairs dealing with telephony in the state. He not only has an enviable record as a contributor to the welfare of the industry but he merits special rank as an employer for he has folks working for him today that have been with his operation for over 40 years.

Bowden still holds the reins of the three companies he controls, the Almond, Coloma and Union Telephone Companies, the combination of which serve about 1500 customers, but much of the work is being taken over by his son, Dwight, who engineered conversion of Coloma and is handling a like task at Plainfield.

This year there were three generations of Bowdens at the Wisconsin convention, Al, his son, Dwight, and Dwight's daughter, 11½ month old Karen.

B. H. Piepmeier, of Black River Falls, is next in line of service to the Association. "Piep" joined the board in 1943. He was vice president and general manager of the Gary properties in Wisconsin for many years and acted as president of the Association during the 1954-55 term. For some time after the Gary-General merger he served as Western division manager for General and then early this year retired from his duties simultaneously retiring from the Association Board.

J. F. (Jack) Benjamin, who heads the Cumberland Telephone Co., joined the Board in 1946 and has a creditable service record to the Association. He has headed many committees, will continue to function as chairman of its Pension Committee and served as president in 1955 and 1956.

The fourth member of the group, T. H. Sanderson, is an attorney at Portage and president of the Peoples Telephone Co. which has exchanges at Rio, Fall River, Randolph, Cambria and Fox Lake, meeting the telephone needs of over 3000 customers in one of the most densely settled rural areas of central Wisconsin. Tom has been perennial chairman of the Association's Resolution's Committee and also wielded the gavel as president in 1953 and 1954.

ORMAS G. SMITH, chief engineer for Illinois Bell Telephone Co., last month took over as president of the 3,000-member Western Society of Engineers. Smith, a telephone engineer for 31 years, succeeds George L. Jackson, chief engineer of the Illinois State Toll Highway Commission. Other new officers: William R. Marston, Chicago's deputy city traffic engineer, first vice president; Hjalmar W. Johnson, vice president Inland Steel, second vice president; John T. Rettaliata, president, Illinois Institute of Technology, treasurer.

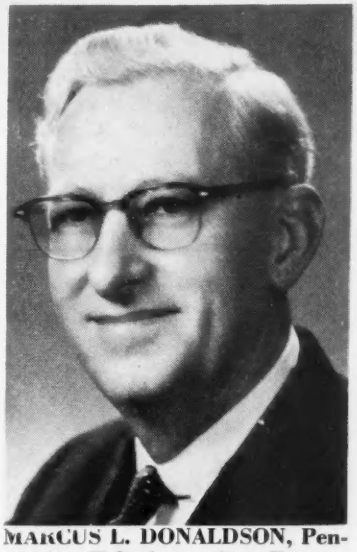
"Driver Manual"

ONE OF THE most popular books ever prepared for the trucking industry — The White "Driver Manual" — has been revised and re-issued. The "Driver Manual" has been adopted by many fleet driver training courses and has been particularly helpful to truck owners, fleet superintendents, and drivers.

The original manual was the first compilation of authoritative data based on the experiences of successful drivers, the teachings of authorities throughout the motor transport industry, plus a nationwide study of drivers' problems and their solutions.

The book discusses correct preparation for a trip, correct starting of the truck, correct take-off, correct road practices, correct parking and correct care. It is dedicated to America's drivers.

The book is available at $1.25 per copy Address your request to Sales Promotion Dept., The White Motor Co., (Dept. TE&M) Cleveland 1, Ohio.



MARCUS L. DONALDSON, Peninsular Telephone Co., Tampa, Fla., has been elected Grand Master of Masons in Florida. Donaldson succeeds Charles R. Lucas of Winter Haven. More than 900 registered Masons attended the 128th annual grand communication of the Grand Lodge of Florida, F. & A. M. at which the election was a highlight.

General of S. W. Reports New Rate Adjustments

THE FOLLOWING rate increases became effective in exchanges of General Telephone Company of the Southwest during the month of May, 1957:

Exchange	Effective Date	Old Rate	New Rate
Roaring Springs, Texas	May 21, 1957		
Dial	Bus.-1-Pty.	$7.00	$ 9.00
111 Stations	2-Pty.	5.50	7.50
	Res.-1-Pty.	4.00	5.00
	2-Pty.	3.50	4.25
Wilson, Texas	May 21, 1957		
Dial	Bus.-1-Pty.	5.00	10.00
112 Stations	2-Pty.	4.00	8.50
	Res.-1-Pty.	3.00	5.50
	2-Pty.	2.50	4.50

Harrison Taylor Joins C & D Batteries, Inc.

HARRISON TAYLOR has joined the Headquarters Service Division of the Engineering Department at C & D Batteries, Inc., Conshohocken, Pa.

Taylor joined C & D following 35 years' service with Electric Storage Battery Co. Starting in 1921 as an operating engineer in the Philadelphia area, he continued in this assignment for four years. In 1926, he was transferred to the company's Atlanta, Ga., territory, where he worked as a service engineer for 27 years. Three years ago, Taylor returned to Philadelphia as staff engineer in Exide's general offices' Service Division.

GENERAL MACHINE PRODUCTS COMPANY, INC.
7th & Wood Sts.
Philadelphia 6, Pa.

Aerial Tents
Cable Benders
Cable Blocks
Cable Lashers
Coaxial Cable Tools
Lashing Wire Clamps and Grips
Portable & Power Reels

#7458 SEALING COMPOUND

The C Resin Compounded activator, when mixed together, produce the proper proportion of flowable compound, known as one unit, to produce a plug or dam when desirable to sectionalize cable and seal cable terminals. The compound and activator is packaged in two sizes: regular size 50 gram compound and 19 gram activator, large size 168 gram compound and 64 gram activator. Additional information is available on installation and on the tools required.

Distributed by GraybaR

Special Purpose Tools To Specifications
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Over 450 various items of Line Construction Tools, Maintenance & Pressure-Testing Equipment in stock for immediate Shipment

SPECIALIZED COMMUNICATIONS EQUIPMENT SINCE 1918 GMPCO

SIGNS ALONG THE LINES

LINEMEN AT WORK
USING
Crapo GALVANIZED
GUY & MESSENGER STRAND

Positive strength and durability economies, combined with the superior qualities of steel, make Crapo Galvanized Steel Strand a rugged performer. The heavy, ductile, tightly-adherent galvanized coating — applied by the famous Crapo Process — provides dependable protection for the steel, prolongs the expectant life of the strand. There is a size and grade of Crapo Galvanized Strand for every practical need.

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STEEL & WIRE COMPANY, INC.
Muncie, Indiana

IF YOU USE THESE PRODUCTS . . .
send for the world's most complete, illustrated catalog of
ELECTRIC LANTERNS
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SAFETY CANS

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The world's first comprehensive table of lamp and battery operating information
High power searchlights
All-purpose hand lights
Safety lights and lanterns
Flammable liquid SAFETY CANS
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construction and maintenance DIGEST

- **Real cool sitting**
- **Easy wedding**
- **Plastic armor**
- **Anti-aging cable**
- **Two for one**
- **3 ways better**
- **25-year battery**
- **A lasting wire**
- **Country-style thrift**

Published regularly to help you get the most out of your materials and supplies dollar

by Ernest P. Riviere, Jr., Inside Sales—San Francisco

The other day I chalked up my 5th year with Stromberg-Carlson—but one of the orders I filled that day made me feel pretty much a youngster in the business: I sent out a battery we promise will serve you for 25 years! That started me thinking about other equipment we supply. Here, the guarantee is a quarter century—there, it's for life, **period.** And always, the guarantee is a double one—ours, and the maker's. It made me realize again how much your orders mean to the science of telephony. It's your supply business that helps us continue our research for ever-better, ever-longer-lived telephone equipment. Thanks a lot!

Cane-seat chair keeps operators cool, comfortable

Making the operator as comfortable as possible may not strike you as a "maintenance" problem – yet your service is much smoother when the girls are cool and relaxed.

This operator's chair has a cane seat, which is much cooler, cleaner and more comfortable than other types. It retains all the posture advantages for which Sturgis is famed. It is called the Sturgis SC-240.

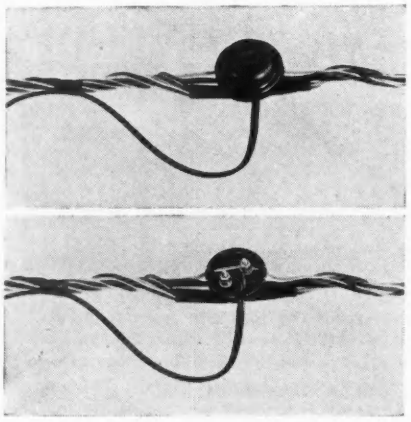
The posture-curved, well-cushioned backrest is covered in genuine leather.

The exclusive Sturgis "Follow-Flex" feature automatically adjusts to the operator's every movement, supports her restfully all the time, discourages fatigue, keeps her at top efficiency.

Other new and welcome features include a plastic-coated steel foot ring which retains its color, and a handy purse holder, available on request. Six seat heights, all adjustable.

Makes Tough Connection Simple

You can greatly simplify the tough unprotected single pair connection between drop or bridle wire, and RD or Urban Distribution wire—with Reliable Wire Terminal No. 5500.



Work-saving wire terminal by Reliable Electric Company

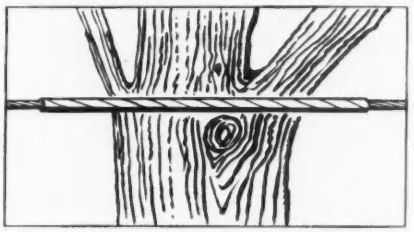
A stainless steel clamp mounts the unit securely on the steel support wire. Neoprene cover snaps securely to make a weather-tight enclosure. The body is rugged molded phenolic, with binding posts and mounting screw molded integrally.

You don't have to cut the RD wire when installing. Simply skin and terminate.

Long-lasting protection at low cost

You get effective, long-lasting, inexpensive protection of covered cables or conductors with Preformed Plastic Line Guards.

Easily installed by hand, these line guards protect against abrasion by trees, buildings and other obstructions. They fit as securely as metal line guards.



Standard stock sizes in 6-foot lengths. Other lengths available on order.

PLP Plastic Line Guards are available from stock in standard 6-foot lengths. Or you may order them in 3-foot, 9-foot and other sizes.

Your Stromberg-Carlson representative can offer prompt delivery on your order.

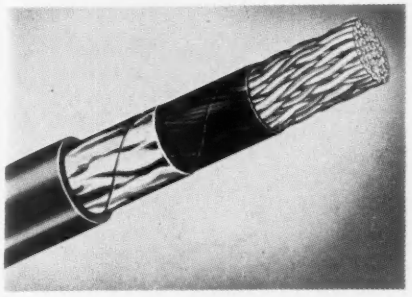
Cable has polyethylene sheath for extra-long life

In outside cable installations, you can side-step the ravages of weather, sunlight and temperature, saving yourself many dollars and hours in maintenance.

To do this, use the protection of the polyethylene sheath on Whitney Blake Telecable®. Telecable exchange area cable for aerial and duct use has polyethylene insulation **and** polyethylene sheath. No other thermoplastic material has given as good assurance of aerial cable sheath life expectancy as has polyethylene.

Specially treated to resist sunlight, the Telecable sheath has maximum chemical resistance, is not subject to environmental cracking.

Extremely light in weight, tough, yet flexible, it resists the stresses encountered during installation. You can expect top performance of Telecable for upwards of 20 or 25 years.

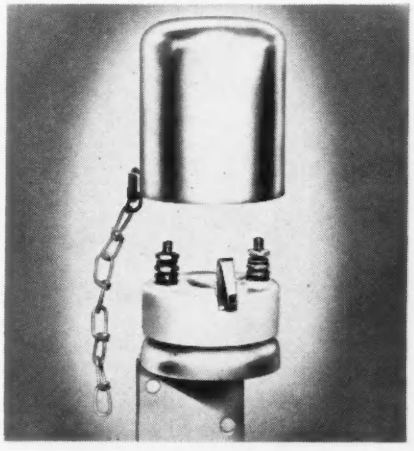


Telecable exchange area cable has outstanding weather resistance and transmission qualities.

Available in No. 24, No. 22 and No. 19 A.W.G. in sizes up to and including 404 pairs.

Convenient drop wire connector

You install Cook Electric Company's "Testerm" Drop Wire Connector where a subscriber's drop is terminated.



For pole or crossarm installation.

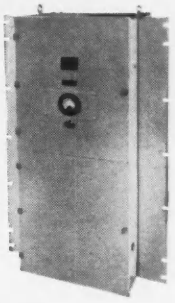
This connector provides terminating facilities for connections to the line wire, and—on the same studs—terminate facilities for connecting the drop wire. Thus when your lineman is testing, he can easily disconnect the drop from the line and quickly reconnect it.

The porcelain base and metal cover are detachable from the mounting bracket by a bayonet locking arrangement of 3 Everdur studs. Wire entrances are sealed by a neoprene gasket.

For convenience and economy, specify Cook "Testerm."

Raytheon Rectricharger® Battery Chargers—Complete Line 3-400 Amperes

Entirely redesigned new Raytheon Rectichargers offer three major improvements:



New Raytheon battery chargers feature ± 1% no-load to full-load regulation

1. ±1% no-load to full-load stabilization prevents battery overcharging, minimizes gassing, lengthens battery life.

2. No audible hum at output terminals.

3. Most compact units on the market—wall or rack mounted.

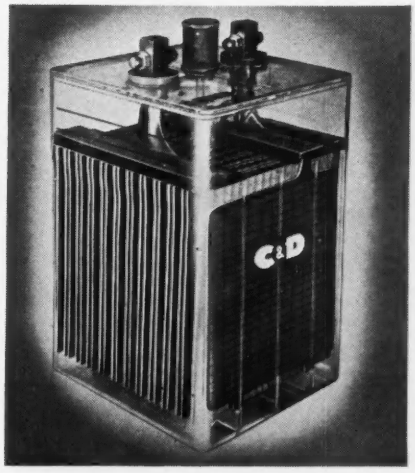
Automatically compensated for rectifier aging, Rectichargers offer high efficiency, completely automatic regulation. No moving parts and self-protecting circuitry assure minimum maintenance, long life. Single and three phase, 3-400 amps.

Built by Raytheon, supplied to you by your Stromberg-Carlson representative.

Battery will still have its pep when 1982 rolls around

It will last 25 years—in full float service! That's the life expectancy of C & D's PlastiCal (lead-calcium grids) telephone battery.

You get this extra-long, trouble-free operation because C & D Batteries, Inc. use an exclusive suspended and supported plate construction.



In full float service, this telephone battery stays on the job a quarter of a century.

Illustrated here is a typical C & D telephone battery with a 660 A.H. capacity. When ordering this 25-year battery, specify PCE-660.

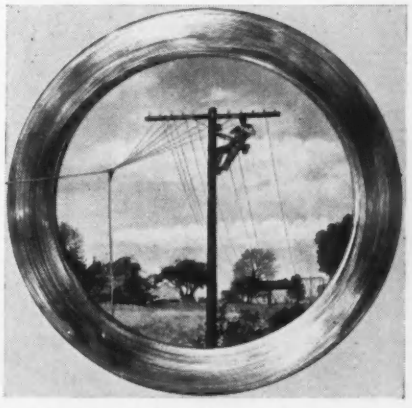
When you find that a 14-year expectancy meets your needs, you can get dependable operation from a C & D PlastiCell (high-tensile lead alloy grids) battery. For a PlastiCell with capacity of 660 A.H., specify CE-23.

You can order either of these C & D telephone batteries, plus other capacities, from your Stromberg-Carlson representative. Ask him about extra-long-life power supply with C & D Batteries.

This top performer brings you low-budget operation

If you'd like to reduce the cost of installing and maintaining telephone lines, may we suggest a rugged wire that staunchly defies wind, ice, and snow?

Copperweld Telephone Line Wire is known as a faithful friend, having wonderful transmission qualities and long, rust-resisting life. It lasts and lasts and lasts—saves you maintenance or replacement costs.



Copperweld Line Wire "talks better," and cuts your maintenance costs.

For short subscriber loops and secondary toll lines, we recommend .080"-30 E.H.S. and for toll lines and long subscriber loops, .104"-40 H.S.

Order Copperweld from your Stromberg-Carlson representative.

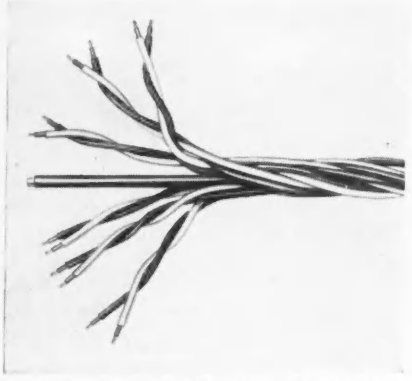
(*Continued on Page* 58)

(*Continued from Page* 57)

construction and maintenance digest

Rural Distribution Wire Gives Speed Plus Economy

For fast, low cost construction specify Ansonia Lightweight Rural Distribution Wire.



Ankoseal Rural Distribution Wire Ideal for Temporary Service or Cable Relief

It comes with plastic-insulated #19 A. W. G. soft copper conductors in color-coded parts, which are cabled around a polyethylene-insulated .109 high strength galvanized steel support wire. Each conductor pair has a controlled different length twist to avoid cross-talk.

A breaking strength of 1800 pounds makes this Ansonia Wire & Cable Company product ideal for temporary service or cable relief.

Your Stromberg-Carlson representative can offer prompt delivery on your order.

Did you know . . . that the Stromberg-Carlson general catalog has more than 100 pages of maintenance and construction supplies alone? You can do *all* your business "under one roof" and find the same quality and reliability in every item.

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A. BISHOP CHANCE, Founder of A. B. Chance Co.

F. GANO CHANCE, president of A. B. Chance Co.

Big Day at Centralia

A. B. Chance Co. Marks 50th Year: Centralia Celebrates 100th Anniversary

THE WEEK of June 9 was a big and important week for the A. B. Chance Co. as its officials welcomed friends to Open House festivities celebrating the company's 50th anniversary and the 100th anniversary of the city of Centralia.

A world leader in the production of earth anchors, the A. B. Chance Co. was founded by the late Albert Bishop Chance in 1907, and, under the leadership of his son, F. Gano Chance, has grown to an industrial network of 11 industrial plants from California to West Virginia.

This growth was described by President F. Gano Chance on June 10 during a press, radio and TV luncheon at the Centralia Country Club when he stated the company had acquired nine companies and founded its Canadian subsidiary in the last 25 years. Five of the companies (W. N. Mathews Corp., Seylor Co., Porcelain Products Co., Specialty Device Co., and American Crossarm & Conduit Co.) have been purchased in the last three years.

"For the past 50 years," he said,

FIRST FACTORY of Chance Manufacturing Co. was this small white building. Here, A. Bishop Chance and a few spare time workers made lightning arresters and pole trusses.

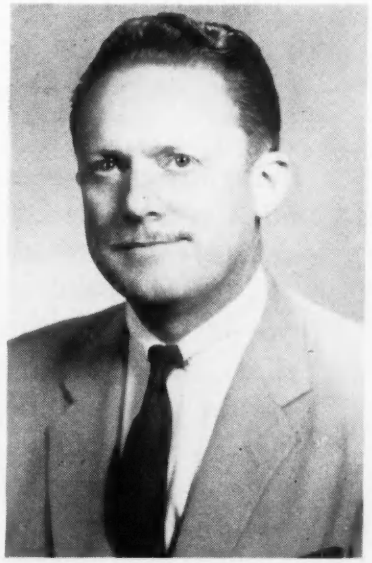
"we have had a healthy growth. The wildest dreams cannot picture our progress in the next 50 years. We can, however, set a reasonable goal for the next 10 years. In 1966 sales should be from $50 to $60 million with our present line.

"To produce and sell these goods, we will need a sales force somewhat larger than we now have. Perhaps 60 men in the 6 wholesale distributors' divisions, and a total of about 125 salesmen in all. The factory force will be almost double, and the product engineering a little larger."

"Our objective is not to be big," he said, "but we will continue to grow as we have in the past in order to have many items to sell and profitable sales on each of them. Incidentally, there is nothing wrong with being big. Without the large corporations we could not have won World War II nor can we win any future war without them. They are essential to our economy. So . . . we of the A. B. Chance Company are looking forward with pride for we know our company is old enough to be sound and mature, and young enough to grow and progress . . ."

Charles Vadersen Joins Federal Laboratories

CHARLES W. VADERSEN has been named manager, coordinated telephone projects, at Federal Tele-



CHARLES W. VADERSEN

communication Laboratories, Nutley, N. J.

Mr. Vadersen will coordinate activities in telephone systems being developed at FTL for Kellogg Switch-

Please turn to page 62

FREE LITERATURE

This feature of "Telephone Engineer and Management" helps you get up-to-date technical bulletins, catalogs and literature. To obtain your copies write Reader's Service Department, 7720 N. Sheridan Rd., Chicago 26, Ill.

Safety "Check List"

TO LOCATE the hidden probabilities of electrically ignited explosions in plants, a "Hazard Finder" has been published by Crouse Hinds Co.

The 8-page, illustrated folder contains a check list of 13 questions that can help you determine whether uncontrolled flammable gases, vapors, dusts, liquids and other combustible materials are making your plant unsafe. Part of the folder is sealed until all the questions have been answered. After the seal is broken, an evaluation of the hazard potential in your plant is revealed, based on your answers and the findings of the National Fire Protection Association.

Truck Body

A NEW 4-page folder on the Holan IU-76 Telephone Installer's Body has been prepared by J. H. Holan Corp. The folder has left side, right side and rear views with compartments open and closed. The center spread is devoted to material and tool layout. Dimensions are given for all drawers.

Wire

BROCHURE from Chester Cable Corp. contains descriptions and technical data of company's wires and cables. Chester bridle wire, telephone cable, inside wire and other cable and wire products described by the brochure, utilize Plasticord and Plasticote insulations.

Ditcher

IN AN ATTRACTIVE, 8-page, two-color folder, Barber-Greene Co. describes its new Model 774 wheel-type Ditcher. The several exclusive features of the Model 774 are all described in diagrams and photographs in the new brochure. A double-page spread illustrates the manner in which the features are related to the design and operation of the Model 774.

"Grasshopper" Fuse

LITERATURE from Cook Electric Co. states that the "grasshopper" fuse and the heat coil, both widely-used throughout the communications and electronic equipment fields, have been combined into a new, resettable, positive acting fuse, arc free and with accurate operation time.

According to the Wirecom Division of Cook Electric Co. the advantages of the new, combined product, include economy, sturdy construction, elimination of the fragile fuse wire, and easier packaging, handling, installation and maintenance.

After trouble has been cleared, the "grasshopper" fuse with heat coil is set again by re-engaging the heat coil rachet. They provide an improved method of protecting circuitry and components, and for actuating alarm circuits or grounding out stray or excessive currents, the company stated.

Emergency Power

STAYING IN operation when power fails or disaster strikes is the theme of a new booklet by Caterpillar Tractor Co., "*Power for Protection.*" The booklet describes, through illustrations and successful installations, how Caterpillar Diesel Electric Sets help maintain "business as usual" whenever emergency strikes. The complete line of Cat Electric Sets is listed with horsepower and kilowatt ratings.

if you want dial . . .

it's **KELLOGG** for

THE MOST COMPLETE

CROSSBAR

Crossbar switching allows you maximum expansion . . . requires practically no routine maintenance . . . gives you high traffic capacity . . . has convenient drawer mounted switches which are easily accessible . . . allows PBX grouping service . . . is adaptable to inter-toll dialing.

DID YOU KNOW THAT . . .

Kellogg was first to make commercially available to Independents the Common Control X-Bar System and also the Step-by-Step X-Bar Control System.

STEP-BY-STEP

Step - by - Step switching gives you long life and low cost operation . . . is expandable for increased station and traffic requirements, allows trunking flexibility . . . is easy to check and adjust (each switch is a separate unit) . . . is compact and space-saving.

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Relaymatic all-relay switching is simple to install and easy to maintain . . . . operates with any type of trunk line . . . allows you up to 10 party selective divided ringing . . . has adaptors available for grounded rural lines.

TE LINE IN THE WORLD !

7-A2 ROTARY

Rotary switching gives you the advantages of motor driven, register-type system . . . allows large trunk groups and is adaptable to inter-toll dialing.

PABX'S

For PABX's you have your choice of several types of switching: cross-bar . . . step-by-step . . . or relaymatic . . . in all sizes.

Your Kellogg representative is well qualified to help you choose the dial system that best fits your needs . . . only Kellogg offers a complete line of dial equipment to the independent telephone company.

For more detailed information on any of these systems ask your Kellogg representative.

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A Division of International Telephone and Telegraph Corporation

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To locate workers—jobs—merchandise.
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Of poles, crossarms, and preservative treatments. Analysis of wood preserving. Consulting and specifications writing.
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MOBILE, ALABAMA
Inspectors stationed throughout the U.S.A.

(Continued from page 59)

board & Supply Co., Chicago, Ill.

Prior to joining the Laboratories, Mr. Vadersen was director of design and development for the North Electric Co., Galion, Ohio, and had held the post of director of research and product development with the Gray Manufacturing Co., Hartford, Conn.

John F. Rittenhouse Named President, C. &. D. Batteries

JOHN F. RITTENHOUSE, executive vice president since 1953, has been named the new president of C & D Batteries, Inc., of Conshohocken, Pa., and Attica, Ind. He fills the post left vacant by the sudden death May 18 of Leon A. Doughty, former president and one of the two original founders of the company.

Announcement of the election was made by Frank S. Carlile, following a meeting of the board of directors to elect new company officers. Carlile, who founded "Carlile & Doughty" together with the former president back in 1906, was elected to the newly created post of chairman of the board. He had been vice president and treasurer of the firm, manufacturers of industrial storage batteries, with plants in Conshohocken and Attica, Indiana.

The board of directors also made the following changes in the management for the firm. Stewart E. Doughty, a company director and son of the former president was elected new company treasurer. Thomas L. Caldwell, secretary was named to fill the new post of comptroller in addition to his present duties. Louis M. Eble, Jr., a director, was named vice

JOHN F. RITTENHOUSE

president and H. Russell Stewart, presently assistant to the vice president in charge of engineering and marketing, was made a director.

One other management post is unaffected with Henry E. Jensen remaining as vice president in charge of engineering and marketing. A new executive vice president to replace Rittenhouse, has not been named.

Except for brief stints with E. I. DuPont and Ideal Industries during the early Forties, John F. Rittenhouse has been associated with C & D Batteries since his student days at Drexel Institute of Technology. After graduation in 1935 he joined C & D's engineering department on a full-time basis. Rittenhouse became chief engineer in 1943, vice president in charge of engineering in 1950, and executive vice president of the company in 1953.

Paddock Named Exec. V. P. Burgess-Manning Co.

S. G. PADDOCK was named executive vice president at the recent directors' meeting of the Burgess-Manning Co., Libertyville, Ill. He

S. G. PADDOCK

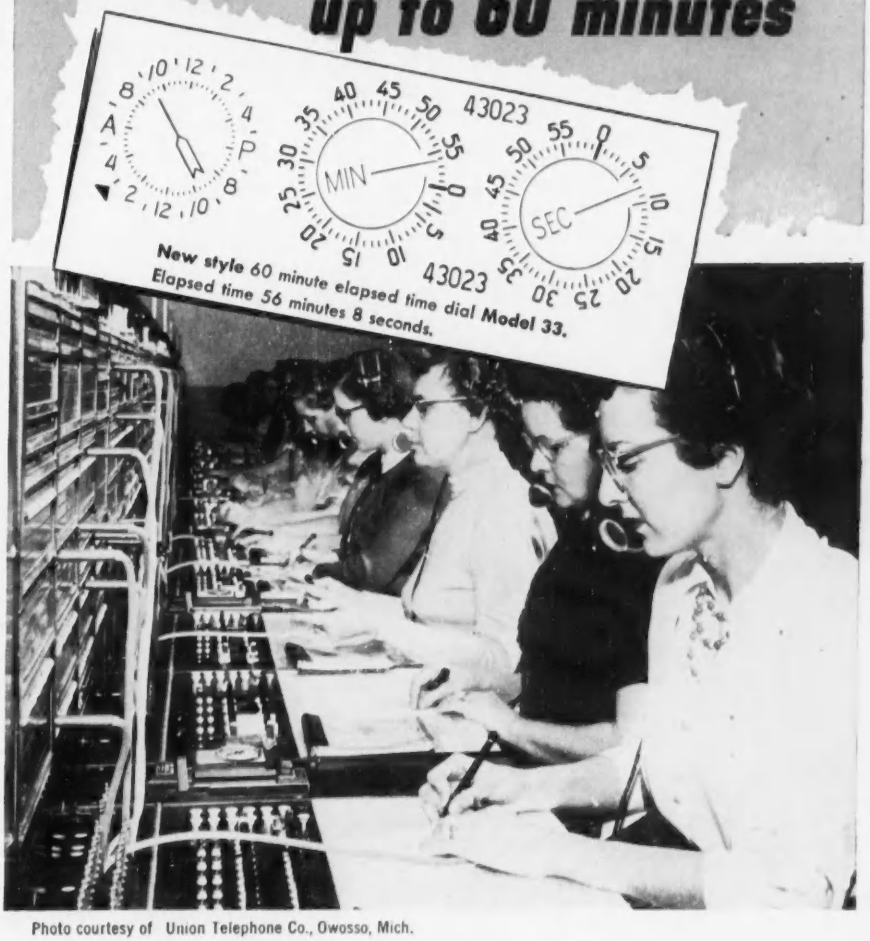
formerly served as vice president in charge of the Industrial Silencer Division, with offices in Libertyville, Ill., and Dallas, Texas.

Also newly elected were F. P. Hutchinson as director; E. D. Woisard as treasurer and assistant secretary, and A. W. Dreffein to the office of secretary.

Mr. Hutchinson was formerly president of Harrington & King Perforating Co., and the other newly elected officers have long been associated with Burgess-Manning Co.

CALCULAGRAPH

Now Automatically gives you accurate Toll Call Records— up to 60 minutes



New style 60 minute elapsed time dial Model 33. Elapsed time 56 minutes 8 seconds.

Photo courtesy of Union Telephone Co., Owosso, Mich.

Now, Calculagraph, the modern dependable computer, automatically figures and prints toll calls up to 60 minutes —no need to add 30 minutes on long conversations.

Thus, Calculagraph adds one more feature to reduce human errors by busy operators and increases the volume of calls handled per operator. Assures you of all revenue due on every call.

For accurate toll call records, for automatic computation of elapsed time, for more efficient operation, install the new 60-minute elapsed time Calculagraph on your switchboard.

Information on this new Calculagraph is yours upon request.

Write today for illustrated brochure to Dept. TM

CALCULAGRAPH Company
HARRISON, N. J.

DEPENDABLE ELAPSED TIME COMPUTERS SINCE 1892

NEW PRODUCTS

HERE'S THE latest information on: (1) a new line of safety reel trailers; (2) a new automatic emergency light; and (3) a new mobile receiver. For complete data use the Reader's Service Coupon on page 65.

Reel Trailers

A COMPLETE line of safety reel trailers, including models to handle from one to four reels at a time, has been introduced by the Ottawa Steel Division of L. A. Young Spring & Wire Corp., to complement its line of equipment.

Multiple reel models with lifting capacities of 3500 lbs. per reel, have been designed to handle all sizes of spools of cable. Pickup arms lower to 12″ above ground, to handle spools as small as 24″ up to 54″ diameter without special attachements.

A single reel model has also been designed to handle large reels of telephone cable.

Engineered with two thoughts foremost in mind, Ottawa Reel Trailers provide (1) a safe one-man foolproof method of handling reels without danger or extra expense, and (2) a rugged and simple design which will withstand years and years of service.

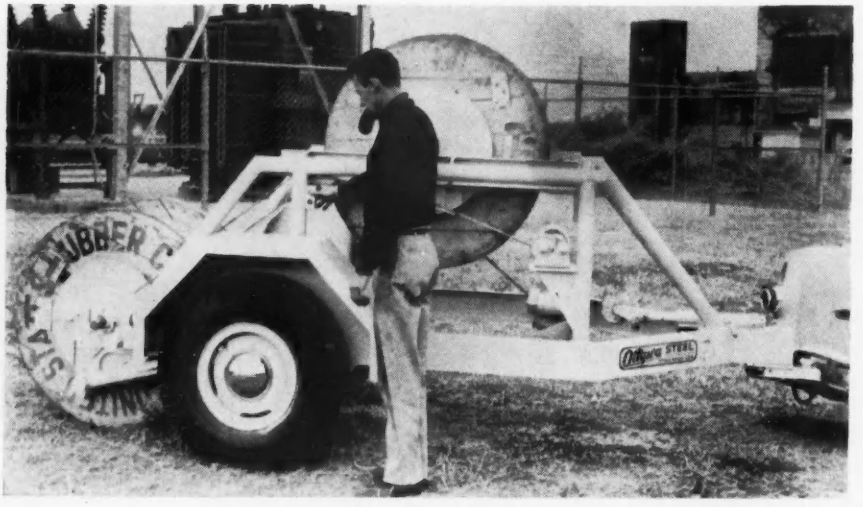
22″ disc type friction brakes on each reel prevent overspin and free wheeling, and provide controlled friction for tension stringing. A precision tensioning device is also available.

No lifting is required by the operator. Reels are simply rolled in between lowered arms and lifted by push button controlled electric winch (or hand winch when no power is available). A hydraulic winch is also available as optional equipment.

Human error is eliminated by simplicity of design and built-in safety factors. Electric winch is designed to prevent any possibility of overloading the lifting cable. Reels roll freely, with no possibility of dropping a reel from top rails, even if rolled crooked. Spindle bars safely lock into place with automatic locking ball lock pins. Reel shaft cannot slip or jump out of place and drop reel while being hoisted, even if the operator should fail to close bearing caps. Lifting arms locked in place in loaded position become part of the side frame, for added strength. Front caster and jack fully retracts to clear underside of frame when in travel position.

Ottawa Reel Trailers are equipped with 12″ x 1¾″ electric brakes, tail lights, stop and directional lights, electrical connector, and trailer hitch for operating behind a truck.

In emergencies one man in a pickup can load and transport reels to a trouble spot without holding up a complete crew. One man can load two reels and be on his way in less than three minutes, or four reels in less than ten minutes. — For complete information and prices, *Check New Product* 163.



New reel trailer.

Emergency Light

THE LATEST model in the "Watchmaster" series of automatic emergency lights has been announced by the Automatalite Division of Carpenter Mfg. Co. The new unit features exclusive, floodlight type, sealed-beam lampheads with strong center beam to light long passageways or to pinpoint exits and critical controls.

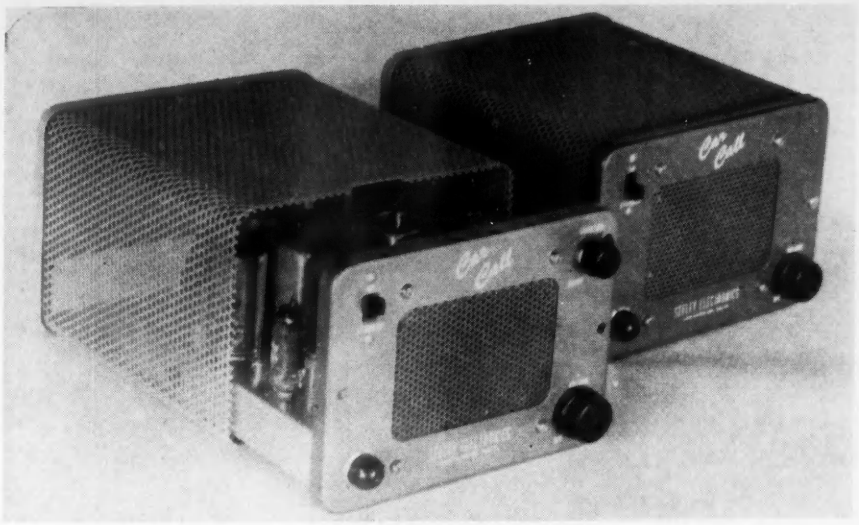
Also exclusive with the new "Watchmaster" is the addition of a device that almost totally prevents the loss of water from the batteries by trapping and re-converting into water the hydrogen and oxygen given off in charging. The same device prevents messy corrosion around battery terminals and guards against explosion hazards from free hydrogen gas. The manufacturer claims added life to battery of from 50 to 100 percent, and that water need be added only once each year or two.

Automatic emergency light.

A timing mechanism guards against overcharging of the battery on "high charge." As in previous "Watchmasters," the units plug into standard outlets and will automatically light up when current fails and other lights go out.—For Complete Data, *Check New Product* 164.

New Mobile Receiver

SEELEY ELECTRONICS has announced a new FM model of the Car Call mobile receiver.



New Car-Call receiver.

According to the manufacturer, the new model F Car Call receiver is ideal for use as an auxilliary mobile receiver in conjunction with the many two-way mobile services in the 30 to 50 megacycle band such as Police, Ambulance, Fire, Utilities, Petroleum, Trucking, Towing and Forestry.

The receiver is a highly sensitive, crystal controlled, fixed frequency mobile receiver which will operate on either 6 or 12 volts. Completely self-contained, it requires no connection with the auto radio. It can be operated directly from the regular auto radio antenna without affecting the operation of the auto radio, thus eliminating the need for a separate antenna. An effective squelch circuit, adjustable from the front panel, is included for complete quieting of the receiver between calls. Featuring drawer type construction for easy access, the 8 tube model F Car Call receiver has a low current drain of only 6.8 amperes at 6.3 volts or 3.4 amperes at 12.6 volts.

For complete information and specification, *Check New Product* 165.

Grating & Treads

AN INFORMATIVE, illustrated bulletin (No. 2527) on grating and treads has been published by the Blaw-Knox Co. This new bulletin presents descriptions on electro-forged, riveted, rectangular, diagonal, "U" type and "T" interlocked grating and treads. — For your copy, *Check New Product* 166.

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BUYERS' GUIDE

ADVERTISING. Directories — *General Telephone Directory Co., 1800 Busse Highway, Des Plaines, Ill.*—[ADV. 1]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*—[ADV. 2]

BOOTHS—Acoustic Telephones — *Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.*—[ADV. 3]

BORING MACHINES, EARTH — *Highway Trailer Co., Edgerton, Wis.*—[ADV. 4]

CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators — *Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 5]

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 6]

PIPE PUSHERS — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 7]

POLES, Southern Yellow Pine — *Taylor Colquitt Company, 217 E. Main St., Spartanburgh, S. C.*—[ADV. 8]

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*—[ADV. 9]

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 10]—

REBUILT TELEPHONES & SWITCHBOARDS — *Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 26, Ill.*—[ADV. 11]

WIRE, Insulated — DATED DROP WIRE — Neoprene or Weatherproof — *Alphaduct Wire & Cable Co., New Brunswick, N. J.*—[ADV. 12]

WIRE, Insulated Drop and Bronze of Copperweld — *Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.*—[ADV. 13]

THE CLEARING HOUSE

Published in each issue of Telephone Engineer & Management. Advertising forms close on 1st & 15th of month. Rates 15 cents a word except for Situation Wanted ads, which are only 10 cents per word. In figuring cost of ads, count each word of address in number of words used. All ads payable in advance. Minimum charge—$2.00. Special rates for display ads on request. Send copy and box number replies to Telephone Engineer Publishing Corp., 7720 N. Sheridan Road, Chicago 26, Ill.

HELP WANTED

PLANT ENGINEERS — For large Independent Telephone Company. Some experience necessary. In reply state age, educational and employment history. Address reply to Personnel Supervisor, Rochester Telephone Corporation, 10 Franklin Street, Rochester 4, New York.

CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1211 Kenmore Avenue, Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

ASSISTANT ACCOUNTANT-OFFICE MANAGER: Graduate accountant or one experienced preferably in utility accounting to supervise and direct the work of other employes, prepare operating and statistical reports, tax returns, etc. Good opportunity with rapidly expanding progressive company. Excellent employe benefits. Iowa-Illinois Telephone Company, New London, Iowa.

WANTED: Man with two or more years experience in Traffic Department to develop as an assistant to Traffic Superintendent. Some technical knowledge of central office equipment desirable but not essential. Large telephone company in the southwest. Good wages and working conditions with employe benefits. For interview write, Box 9069, c/o Telephone Engineer Publishing Corporation, 7720 North Sheridan Rd., Chicago, Illinois.

WANTED TO BUY

Desire telephone company of 400 or more stations. Send details to Box 9068, Telephone Engineer Publishing Corp., 7720 N. Sheridan Road, Chicago 26, Illinois.

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LEICH. #901—1600—
2500 Ohm ..... @ $21.45 Ea.
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Manual ..... @ $13.00 Ea.
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SUBCYCLE. MODEL M.7.5.
Light ..... @ $20.00 Ea.
QUOTATIONS.
F.O.B. CHICAGO, ILL.

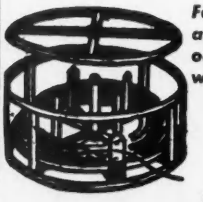
INDEPENDENT TELEPHONE REPAIR CO.
2137 West 21st St. Chicago 8, Ill.

FOR SALE

FOR SALE: Stromberg-Carlson, Type 3 toll switchboard, 24 single positions, with 2 panel sections, cord circuits B-34630, to be superseded with direct distance dialing at Medina, Ohio toll center.
Northern Ohio Telephone Company
Bellevue, Ohio

WESTERN ELECTRIC NO. 392 LOUD BELLS
Refinished and tested, with condenser — $6.00 each.
Telephone Equipment, Inc., Montrose, Mich.

FOR SALE: 4 Positions, Kellogg #3 Toll Board, equipped with 30 toll line, 60 Rural and 1100 (Local line multipled to toll) 10 cord ckts. per position, equipped for toll dialing 5 party keys and collect and return keys, calculagraph wells and operator's chairs, also 6 positions Kellogg common battery switchboard, 15 cord ckts. each, automatic listening, line lamp recall, 1100 lines installed, universal cord ckt. on 3 positions, power panel, meters, charger, ringing machine, line and cut off relays, chief operator's desk, wire-chief desk, interrupters etc. positions can be split up. — Tipton Telephone Company, Inc., Tipton, Indiana.



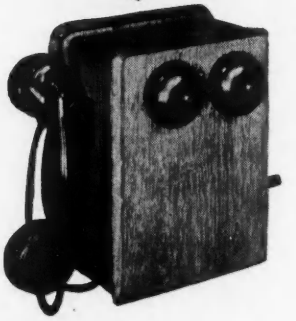
For illustrated literature on this pay-out, take-up wire reel, write

Whitaker Reel Mfg. Co.
P. O. Box 1318
MONROE, LOUISIANA

RECONDITIONED MAGNETO TELEPHONES

FEDERAL DESK OR WALL MAGNETO HANDSETS

#804-BA with W.E. #BIAL 4300 ohm ringer
#804-CW with 2000 ohm Ringer
#804-A with 1000 ohm Ringer



TYPE "C" HANDSET WALL MAGNETO TELEPHONES

5 Bar 1600 or 2500 ohm
3 Bar 1600 or 2500 ohm
Black Lacquer Finish Unless Oak is specified.

BUCKEYE TELEPHONE & SUPPLY CO.
P.O. Box 5707 HUdson 8-0655 Columbus 21, Ohio

Indiana Steel & Wire Announces New Line Wire

INDIANA STEEL & WIRE, Inc., Muncie, Ind., has announced the successful development and manufacture of a new extra-high-tensile line wire called HTL-195 which provides a combination of telephonic transmission qualities and physical strength never before available in a ferrous conductor.

Spokesmen for the manufacturer stated that the improved voice transmission of HTL-195 for low cost rural telephone lines and the superior electrical qualities have been proven in five years of laboratory and field tests.

HTL-195 also offers superior electrical qualities and permits spans of 600 feet in heavy loading districts. Spans of 650 feet in medium loading districts are possible and in light loading districts, spans are possible to 700 feet.

Transmission qualities, in addition to superior strength, are comparable to that of Indiana Steel and Wire's CRAPO HTL-135 — the high-tensile wire already popular in rural America.

Stromberg-Carlson Names Davidson to New Post

RICHARD DAVIDSON has been promoted to the position of service engineer for the territory served by the Chicago Branch Office of Stromberg-Carlson, including the states of Indiana, Michigan, Illinois, Iowa, Wisconsin, Minnesota, North and South Dakota.

RICHARD DAVIDSON

Mr. Davidson joined Stromberg-Carlson in 1951 after attending the Veterans Vocational School, University of the State of New York, where he majored in Electrical Engineering. Prior to attending school he was associated with the Western Electric Co. as an installer. He is a veteran, having enlisted in the army in 1945 in London, England.

Electronic Secretary Industries Builds New Wisconsin Plant

GEORGE W. DANNER, president Electronic Secretary Industries, Inc., Milwaukee, Wis., has announced that the new plant being constructed by the company at Waukesha, Wis. will be ready for manufacturing operations by July 1.

The firm, a part of the manufacturing, sales and research division of the General Telephone System, produces automatic telephone answering and voice recorder equipment.

GEORGE W. DANNER

Final completion of the new modern 24,000 square foot factory is scheduled for late August. All activities now being carried on at the Milwaukee plant will be transferred to the new facility. Production is expected to increase by 125%.

The Electronic Secretary was invented by Joseph J. Zimmermann in 1948. He became acquainted with George Danner, then a partner in an instrument company, and the two teamed up to form the present company, with Danner becoming president and Zimmerman vice president.

The first commercial Electronic Secretary was built and sold in 1949. Demand increased and in 1953, Leich Sales Corp. became the company's distributor.

ROBERT FROST, vice-president of National Pneumatic Co., Inc., and president of Bright Star Industries, has been elected president of The 52 Association of New York, Inc., a voluntary group of 2000 men and women who, since 1945, have served more than 250,000 hospitalized and disabled servicemen and veterans, in hospitals from Massachusetts to North Carolina, with a wide variety of rehabilitation programs.

New Electronic Secretary plant.

ALPHADUCT DROP WIRE carton packaging

Once you start using Alphaduct Drop Wire you will find out that the handy carton packaging has real dollars and cents advantages.

Not only does your wire arrive in perfect condition, but the sturdy carton protects it all the while it's in your warehouse.

The cartons are easier to handle than loose coils. They can be stacked higher without danger of falling and the wire on the bottom will not be crushed or bent. Space is saved, inventory taking is simplified, and the possibility of injuries to workers from tumbling coils is removed.

We try to make Alphaduct the finest, longest lasting drop wire money can buy. Quality materials are used throughout, step-testing during every phase of manufacture assures uniform high standards. Alphaduct drop wire is dated with a color coded thread so you can tell for sure how long it lasts.

Try Alphaduct Drop Wire

ALPHADUCT WIRE AND CABLE COMPANY • NEW BRUNSWICK, N.J.
NATIONAL DISTRIBUTORS • AUTOMATIC ELECTRIC SALES CORP., CHICAGO, ILLINOIS • LEICH SALES CORPORATION, CHICAGO, ILLINOIS. REGIONAL DISTRIBUTORS • PANKEY SUPPLY CO., CHARLOTTESVLLLE, VA. THE LINDSAY TELEPHONE SUPPLY CO., CLEVELAND, OHIO

General Code Retained As Lenkurt Consultant

MAJ. GEN. JAMES A. CODE, JR., USA (Ret.) formerly Deputy Chief Signal Officer of the Army, has been retained as consultant to the general commercial relations manager of Lenkurt Electric Co.

Since his retirement from the Army, General Code has been an

MAJ. GEN. JAMES A. CODE

officer and director and has acted as chief executive of many telephone operating and communications manufacturing companies, both in the United States and abroad.

A graduate of the United States Military Academy at West Point, he also holds the Master of Science and Electrical Engineer degrees from Yale University.

General Code is a senior member of the American Institute of Electrical Engineers, the Institute of Radio Engineers, the American Signal Corps Association and the American Association for the Advancement of Science.

White Motor Purchase Assets of Reo Motors, Inc.

ROBERT F. BLACK, chairman of the board and chief executive officer of The White Motor Co., and Simon D. Den Uyl, president of the Bohn Aluminum & Brass Corp., announced May 27 that White Motor has purchased the assets of Reo Motors, Inc., Lansing, Mich., from Bohn.

White Motor will operate Reo as a division under the direction of John C. Tooker who will be general manager of the division. Reo's general offices, including manufacturing and sales, will continue to be at Lansing.

AUTOMATIC ELECTRIC TOPICS

JULY 1957
VOLUME 22
NO. 1

To Sell P-A-B-X Service, You Simply Create Desire . . .
Get the Facts . . . and Present Your Recommendations.
Your AE Representative Will Be Glad to Help (see next page).

Let AE Help You Sell That Extra-Revenue "Plum" P-A-B-X

ONE of the most steady "providers" available to operating telephone companies is the P-A-B-X system. Month after month, it brings in that extra revenue which means so much. And the good thing about it is that almost no business or organization is too small—and none too large—for an Automatic Electric P-A-B-X system. The field is almost unlimited—especially with today's business growth.

Automatic supplies a P-A-B-X for as few as 10 (or less) telephones, and the largest system is equipped for 200 (or many more) telephones. So there's a system for each of your business subscribers. Extra services, such as automatic code call, paging telephone, executive direct-line, secretarial answering service, etc., are available with most P-A-B-X's, to make them even more valuable to your business customers.

Three Steps to "Sale"

Now, to sell your customers on P-A-B-X, there are generally three definite steps involved: first, to create desire; second, to get the facts; third, to present your recommendations.

In the first step, many telephone companies assume (and correctly, too) that every business subscriber with eight or more telephones is a prospect. So they simply write to each such subscriber a letter mentioning the advantages of P-A-B-X. They stress the quick service of the "inside" telephone, its constant availability—with no dependence on an operator—the way it saves everyone's time, and the fact that a P-A-B-X frees the subscriber's telephone attendant to give full attention to incoming calls, thus giving his customers better service.

An important part of such a letter is a promise that you will make a follow-up telephone call to set up a definite appointment with the prospect. Then when such a call is made later, it gains a higher rate of acceptance.

Now for Step No. 2

The second step of the promotion begins when the interview appointment is made. Be sure to acquaint yourself with the customer's particular situation, as well as to become thoroughly familiar with the P-A-B-X equipment and services he may be able to use.

The interview should be merely one businessman talking to another—an explanation by a communications specialist to a client, of the benefits of a modern telephone system. Show how a survey of the organization can be made, to present a complete picture of its communications needs. And, of course, offer to make such a survey; experience shows that this is almost always an essential part of making a "sale."

Many of the facts you'll need can be supplied by the businessman himself, but for others you may need to make a personal study of the organization. Remember that a thorough job on the survey will do a lot to build confidence in you as a real, professional communications man.

Automatic Electric supplies a P-A-B-X system for any size business or organization. Type 85 (top) is for 10 telephones or less; Type 75 serves 200 or more telephones. Other models are available for requirements in between.

Final Phase Important

With the information assembled, your final phase of negotiations consists of an intelligent review of the facts and the drawing up and presentation of a proposal. Such a proposal should include, at least, these basic elements: a review of the present system, recommendations for improved telephone service, benefits of this new system, a contract and a request for approval of your recommendations. If you do a good job here, there's a good chance you'll be invited to "come on over and pick up our contract!"

Here's Help

Some telephone companies start the above program whenever a subscriber grows to eight telephones; others have periodic "sales drives," to pick up all prospects that have developed since the preceding drive. Automatic Electric has prepared and assembled a complete P-A-B-X Sales Kit, which is designed for just such a program as here briefly described. It includes detailed information and suggestions for planning your entire campaign, as well as literature and sample letter, survey, proposal and contract forms. It's free to you. Write for yours, today.

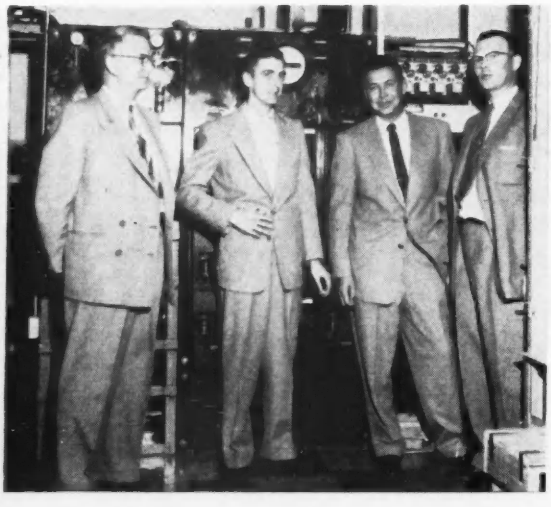
And remember, too, that your AE representative stands ready to help you in any phase of your negotiations. Your consistent follow-up with his help, as you wish, will give you an excellent chance of success.

To sell your P-A-B-X prospect, first send a letter to create desire; then, call for a definite appointment to get the facts (such calls gain a high rate of acceptance). Third step is to submit your recommendations.

The P-A-B-X Sales Kit gives you the complete "ammunition" to help solve your customer's problems and to sell your prospects. Your AE representative, too, will gladly help you throughout your negotiations.

SATT, Strowger and Lenkurt Carrier

. . . Here and There



Pleased with a successful cutover are California Water and Telephone Company's Lee Allen, Redlands District Manager; Al Lange and Gene Gray, installers, and Bill Kingsley, in charge of installation, at Perris, California.

Perris, California

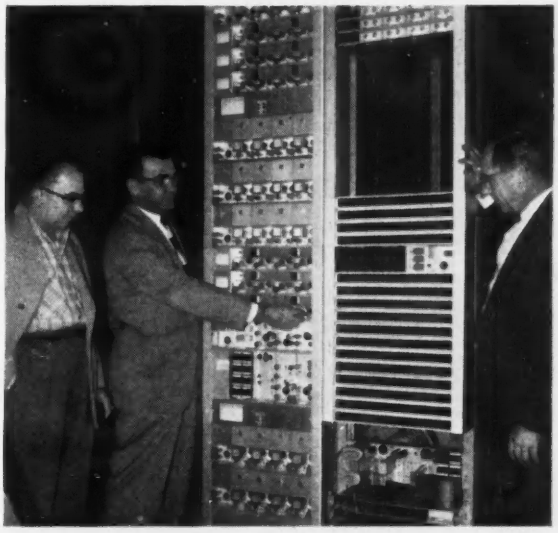
Skillful engineering, taking advantage of the flexibility of Strowger equipment, was utilized by California Water and Telephone Company in the economical cutover of another exchange to Strowger Automatic, at Perris, California. The power boards, and some of the line equipment, had been made available when other Strowger offices were replaced by larger units. With some years of service behind it, this equipment is good for many more years at Perris!

The Perris office consists of 600 lines and 1400 terminals and is housed in a new air-conditioned building which is designed for the next 20 years' expansion. The new Strowger equipment provides for inward operator toll dialing.

This Southern California community is near March Air Force Base, and much of its growth is attributed to the residence there of Air Force personnel. In its own right, however, Perris is a center for potato farmers in the area.

Beatrice, Nebraska

The Lincoln Telephone and Telegraph Company's Beatrice, Nebraska, exchange was cut over to 3100 lines of Strowger Automatic dial equipment and to a Type "BD" SATT system June 16, 1957. This is the first exchange in Nebraska to have DDD. The office serves 5,584 subscribers.



Killeen, Texas

In the Killeen, Texas, office of Mid-Texas Telephone Company, Chris Finn (left), Superintendent, and W. E. Lyon (right), Vice President and General Manager watch closely as Automatic's Howard L. Housley reaches for one of the miniaturized plug-in units on the new Lenkurt Type 45 BN carrier equipment. This equipment provides additional toll circuits to the Bell office at Temple, Texas, over an existing aerial cable.

Vashon, Washington

There's an island in Puget Sound between Seattle and Tacoma—Vashon Island, Washington—which can be reached only by ferry. But a recent installation by the Vashon Telephone Company brought residents closer to the "mainland" —conversationally speaking, at least.

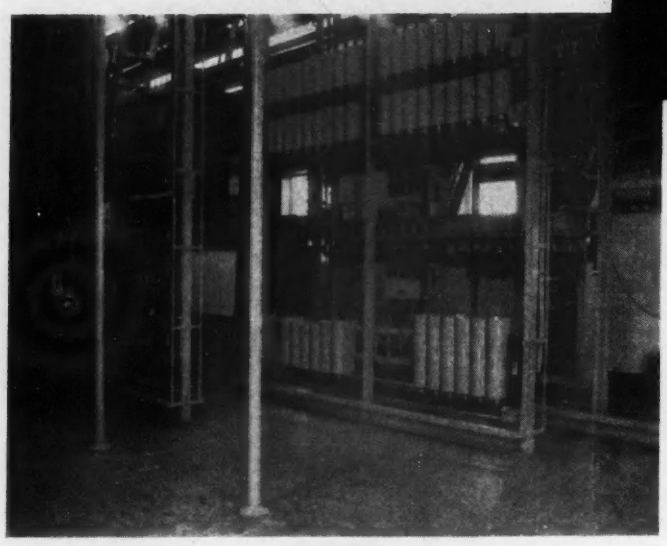
Vashon subscribers now have dial telephone access to Tacoma, Seattle, and ten other nearby western Washington communities through a Type "C" Strowger Automatic Toll Ticketing system, which was placed in service on May 25. With Type "C" SATT, the subscriber dials an access code to reach the SATT equipment, then dials his own number, and the number called. The equipment automatically verifies the calling number, records it and the number called, and the length of the conversation—all on a punched paper tape, which is then used for accounting. (At the Vashon company, an automatic ticket printer prints tabs for billing purposes.)

The many tickets formerly made out by long-distance operators of the Vashon Telephone Company are now handled by Type "C" SATT equipment—on calls to Tacoma, Seattle and ten other nearby communities. Company President W. F. Barnett, and Blanch Heien, service representative, sort tickets made from the SATT tape, on calls made by Vashon Island subscribers.

"Now you're closer to the outside world," demonstrates Vern Young, Vashon installer, as he explains Direct Distance Dialing to Mrs. Hazel Leaf—to the amusement and amazement of her children, Cindy and Bobby.

New Vistas of Telephone Progress

for ALTAVISTA, VIRGINIA



The 800 lines (1500 terminals) of Stowger Automatic dial equipment recently cut over in Altavista, Virginia, occupy this modern exchange building.

During the period from 1946 to 1957, telephones in Altavista, Virginia, tripled in number—from 469 to 1405. And with an eye to a continuing increase, the Virginia Telephone & Telegraph Company recently installed a modern Strowger Automatic dial system to replace manual equipment.

The cutover to dial provides "2-5" numbering, terminal-per-station operation, and selective ringing, and the exchange is ready to join the nationwide Direct Distance Dialing system whenever that service becomes available at the Bell toll center at Lynchburg. Altavista already provides extended-area service to Hurt—on the opposite bank of the Roanoke River.

The new Strowger equipment includes 800 lines and 1500 terminals. A modern building—designed for even more expansion—brings new beauty to the community, adding to the utmost in efficient dial telephone service.

Commenting on the cutover, District Manager S. F. Collins is quoted in a story in the Altavista Journal, "A lot of hard work and large sums of money went into the program to bring Altavista and Campbell County the most modern telephone systems. It could not have been accomplished without the full cooperation of our entire force of loyal and efficient employees, together with the cooperation and assistance of the officials of the Town of Altavista and all of our subscribers.

"The new system has been designed to meet the anticipated future demands for telephone service in the entire area, and contains the necessary features for adaption to the rapid changes and improvements which are being made in the telephone industry."

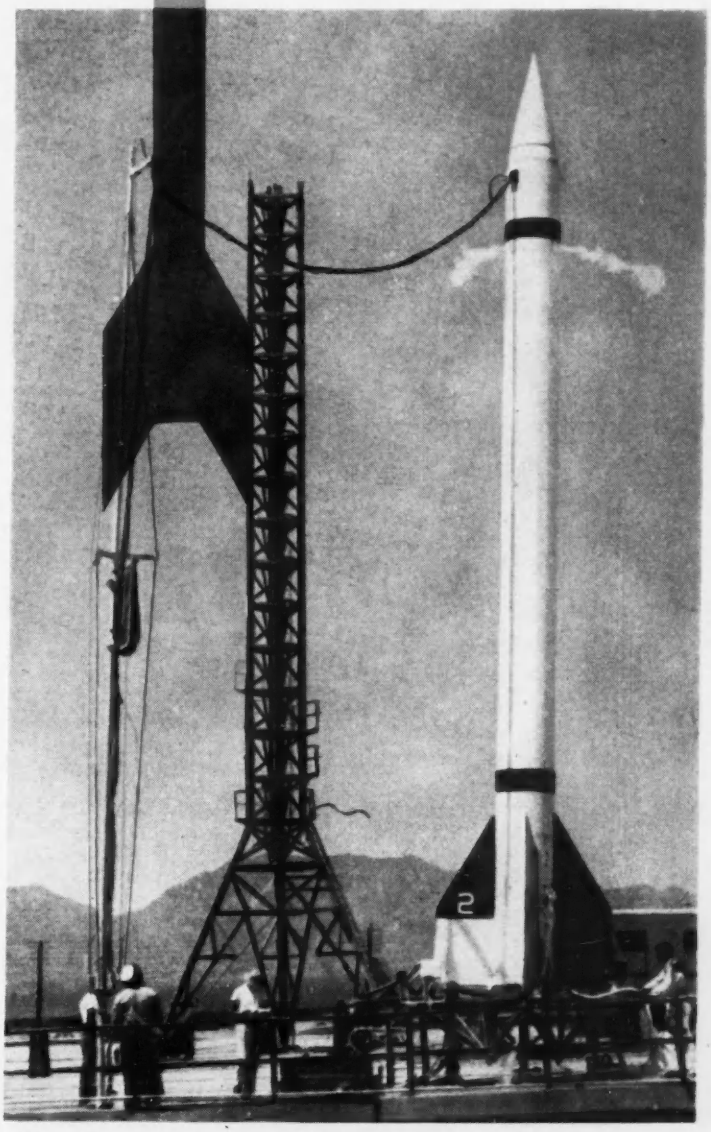
You just *know* you're right when you choose Strowger!

What Does Telephone Equipment Have To Do with **ROCKETS?**

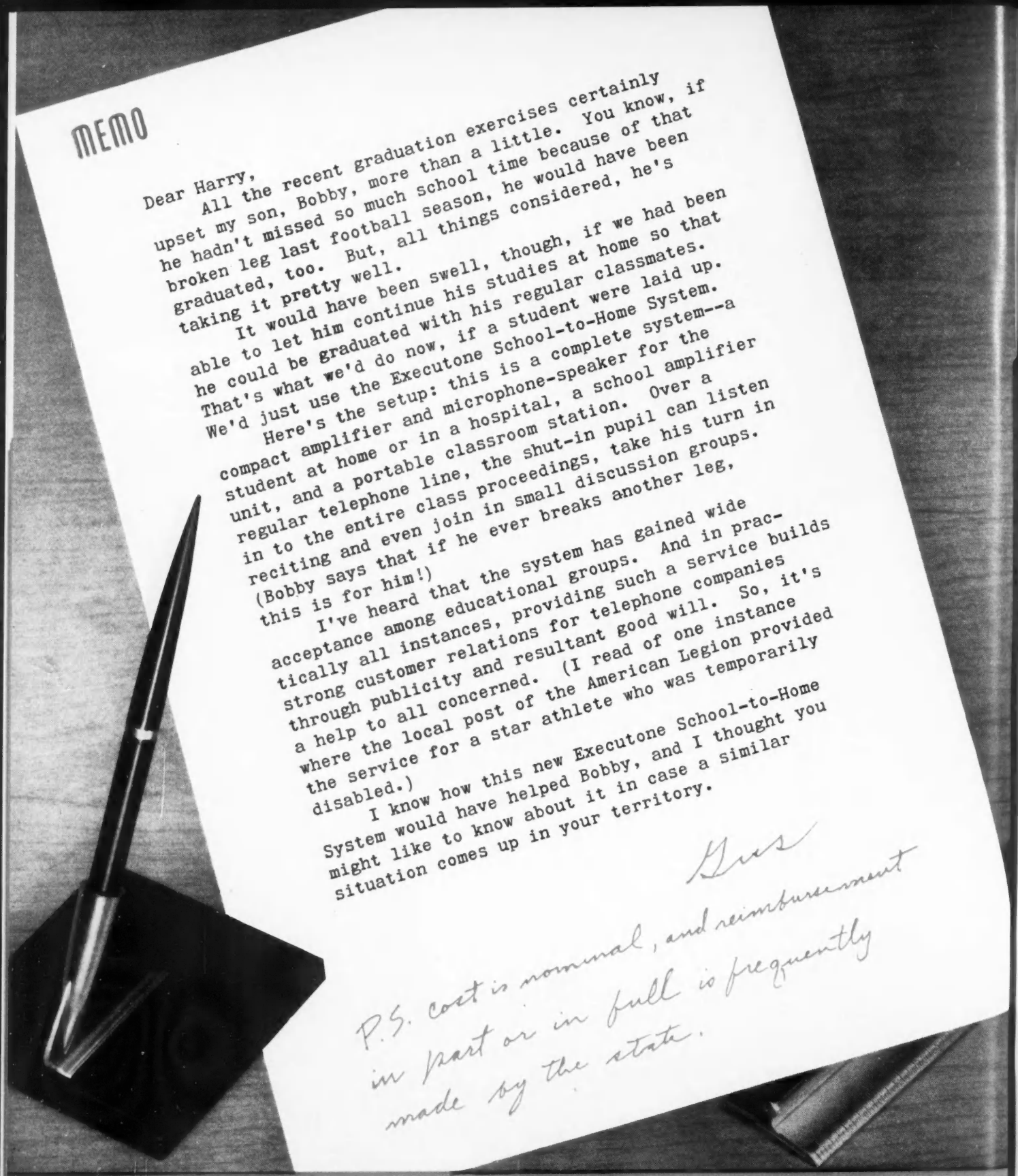
QUITE a bit, actually. Telephone relays and switches, of course, have been proved in communications equipment for their precision and accuracy. So exact are they that they are being adapted for more and more uses outside the telephone field—including applications in rockets and guided missles, and in related ground control equipment. And other industries have found many more applications for these electro-mechanical wizards; for instance, the famous Univac makes use of many relays and stepping switches.

Still more applications include those in multichannel radio selection, power supervisory equipment, electronic plate circuits, welding control equipment, precision machinery control, propeller pitch and engine synchronization, landing flaps and landing gear, automatic pilot equipment, bomb releases and radio pulse repeating.

Of course, the major role of the relay and stepping switch is still in the telephone industry, but where other industrial operations must be as dependable as is humanly possible, these "telephone-type" relays and switches often take over. You see, these other industries have learned that these components are tops!



"Telephone-type" relays and switches play an important part in rockets and guided missiles. This is the Navy's Viking Rocket, readied for firing at the White Sands, N. M., proving grounds. Relays and switches have many other uses in industry.


MEMO
Dear Harry,
All the recent graduation exercises certainly upset my son, Bobby, more than a little. You know, if he hadn't missed so much school time because of that broken leg last football season, he would have been graduated, too. But, all things considered, he's taking it pretty well.
It would have been swell, though, if we had been able to let him continue his studies at home so that he could be graduated with his regular classmates. That's what we'd do now, if a student were laid up. We'd just use the Executone School-to-Home System. Here's the setup: this is a complete system--a compact amplifier and microphone-speaker for the student at home or in a hospital, a school amplifier unit, and a portable classroom station. Over a regular telephone line, the shut-in pupil can listen in to the entire class proceedings, take his turn in reciting and even join in small discussion groups. (Bobby says that if he ever breaks another leg, this is for him!)
I've heard that the system has gained wide acceptance among educational groups. And in practically all instances, providing such a service builds strong customer relations for telephone companies through publicity and resultant good will. So, it's a help to all concerned. (I read of one instance where the local post of the American Legion provided the service for a star athlete who was temporarily disabled.)
I know how this new Executone School-to-Home System would have helped Bobby, and I thought you might like to know about it in case a similar situation comes up in your territory.
Gus
P.S. Cost is nominal, and reimbursement in part or in full is frequently made by the state.

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Northlake, Illinois
John Sharkey, Editor

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THE BACK OF THE BOOK

By JOHN G. REYNOLDS

Note of Hope

PARENTS of 'teen-agers may find the family telephone is not entirely out of their hands if a recent Associated Press story is an example.

A 'teen-age forum in a Toledo, Ohio, church suggested a 15-minute limit on telephone conversations by the younger set "as one means of avoiding friction within the household."

Ernie, The Robot

ERNIE, the green-eyed robot, went on duty in London last month and awarded $178,000 in prize money to 188 Britons.

An electronic machine with a single green light, Ernie picks numbers at random, and holders of bonds with those numbers win cash prizes. The raffle scheme was dreamed up by Prime Minister Macmillan to stimulate bond purchases.

Ernie, whose full name is Electronic Random Number Indicator Equipment, brings a fine reputation to the job. He's honest, absolutely impartial and incorruptible — how are you going to bribe a machine?

It's all very practical, though some people undoubtedly will moralize about the implication that the only people you can trust are robots.

We wonder, however, how long it will be before somebody charges that Ernie's insides were rigged in favor of somebody else? We have a strange feeling that it won't be very long.

That's the trouble with robots. If you can't trust people, you can't trust anybody. Even Ernie.

Worry Is Good?

SOME government health experts, warning recently against the dangers of the new tranquilizing drugs, said it's good for people to have worries. Give everyone tranquilizers, make them happy and you stop progress, they said.

This could explain a lot of things. Do you suppose the progress-through-worry advocates have infiltrated the whole government? Maybe the budget-boosters and the crisis-stirrers believe they are acting in our best interests, spurring us on to bigger and better things via the high-tension route.

If progress can really be judged in terms of worry, our progress as a nation should be downright phenomenal. In terms of worry wattage, our national pressure must be close to the fuse-popping point.

Maybe if we could isolate a few of these worry warts and squeeze a few tranquilizers down their tense throats we could all get back to normal.

Worry-Wart

WE understand a big clinic has discovered that the famous American character, the tired business man, works, talks, and plays too hard. He cannot slow down. He cannot stop worrying. He stuffs his business troubles in a brief case and totes them home with him. (We've been doing it for years.) He goes out to lunch, but does more talking than eating. He does not have a hobby, but once a week exhausts himself in some violent sport. He's so indispensable (or thinks he is) that he cannot take a real vacation. The common ailments of this unhappy creature are coronary disease, high blood pressure, and ulcers.

In one company, where all the executives went regularly to the clinic, 80 percent needed either a doctor or a psychiatrist.

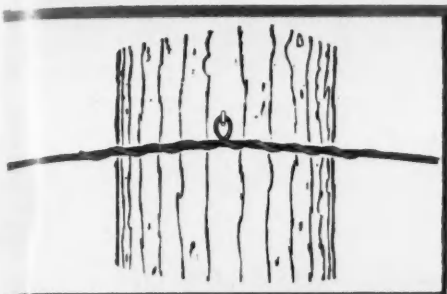
We don't know your reaction to that bit of information — but one of our associates is looking for a spot as a deck hand on a slow cruise to the South Sea Islands.

Had Their Number

WE UNDERSTAND an irate customer of a Pacific Coast telephone company minced no words last month in her complaint to the state utilities commission.

She summed up her objections to a rate increase in one sentence, as follows: *"In the valley we call it the 'Drip and Tinkle Company,' because when it rains; the telephone don't ring."*

IS EVERYBODY HAPPY?



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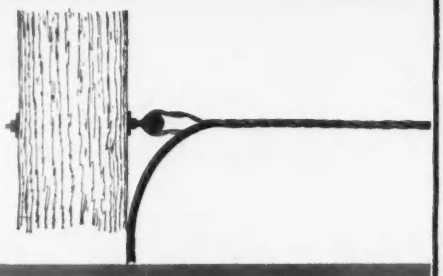

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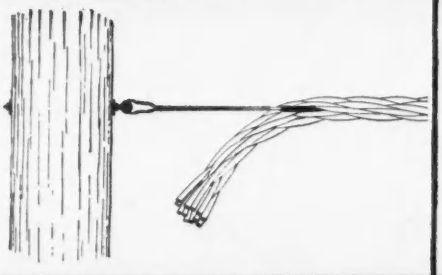
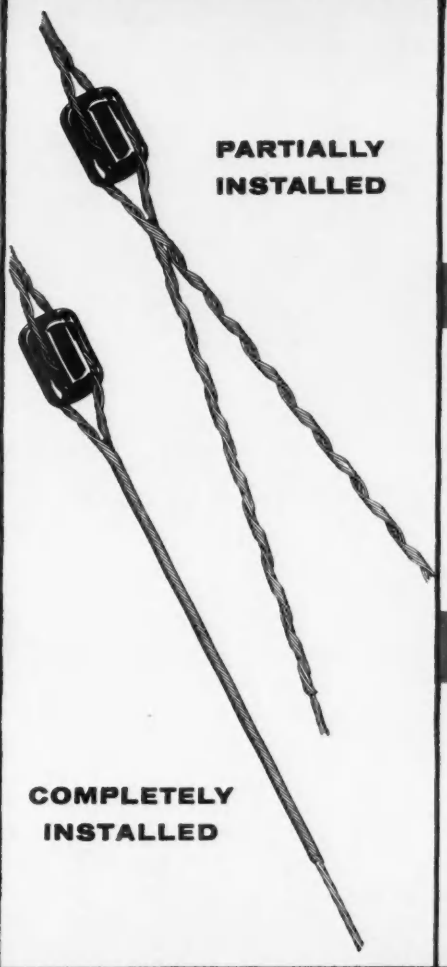
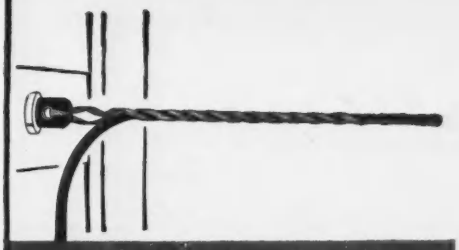


"B" Rural Dead-Ends



Guy-Grip Dead-Ends



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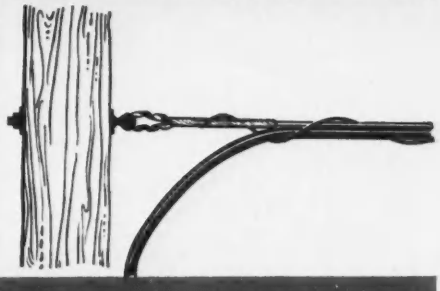
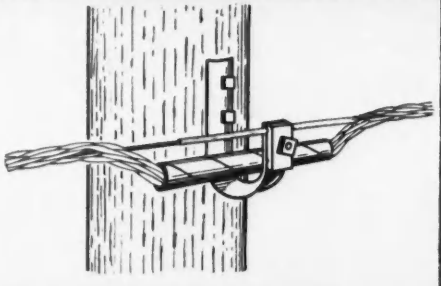


Lashing Rods

Splices for Line Wire and Messenger



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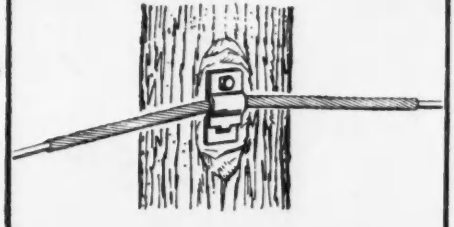
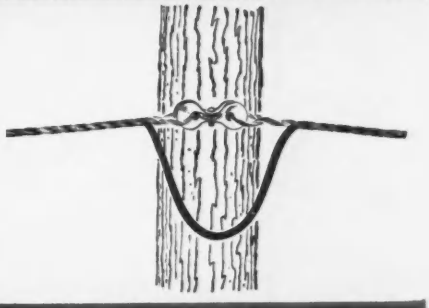


Line Guards



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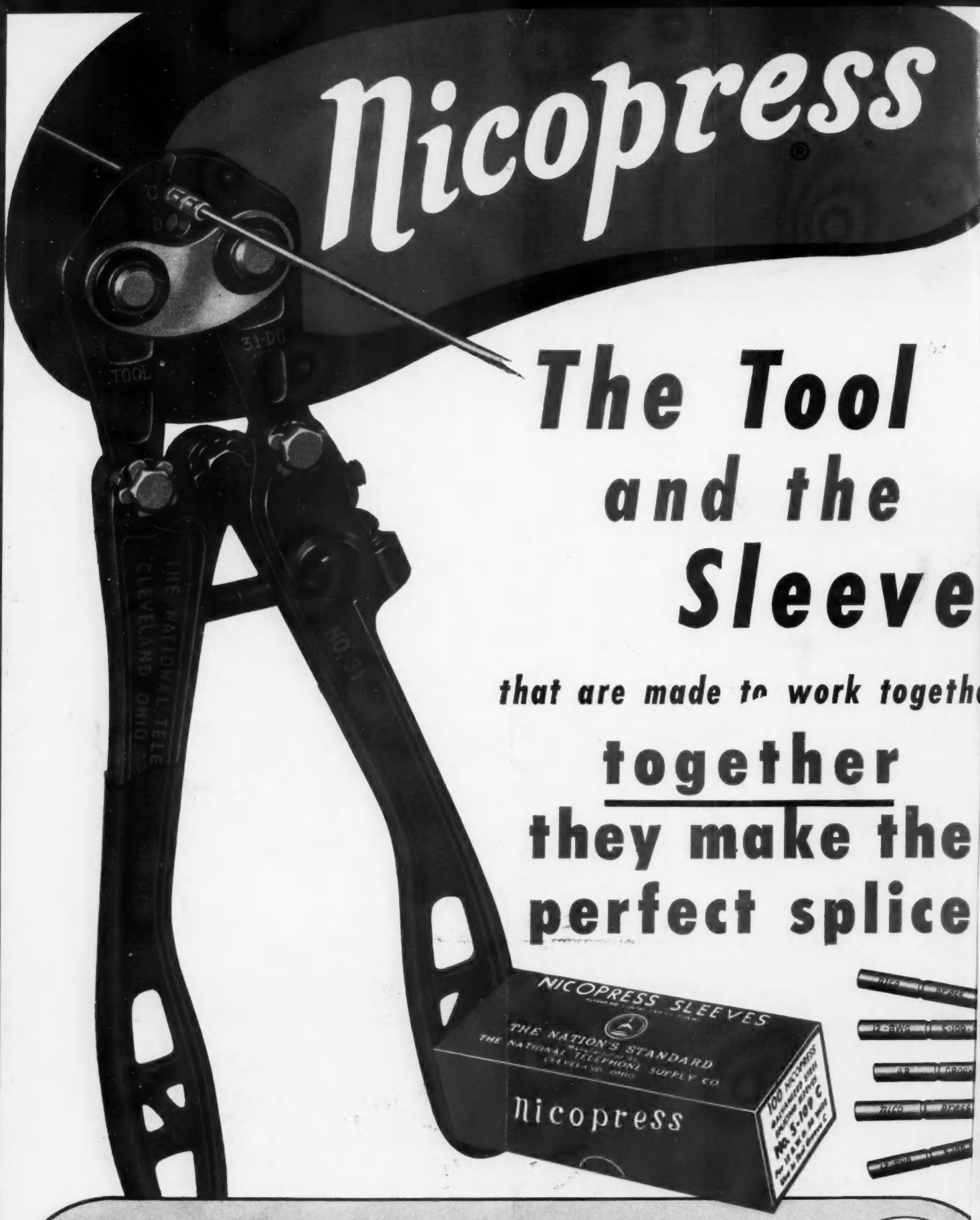

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